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(54) **Vibration unit for exercise devices**

(57) The invention relates to a vibration unit with a grip or a contact surface, to be mounted detachably on exercise machines or on a body part. The vibration unit comprises a vibration generating element (1, 2) and a mounting device (4). According to some embodiments of the invention, the mounting device is adapted for application around or inside a handle of an exercise machine. According to other embodiments of the invention, the mounting device is adapted for application on a frame of an exercise machine or on a body part, by means of various devices.

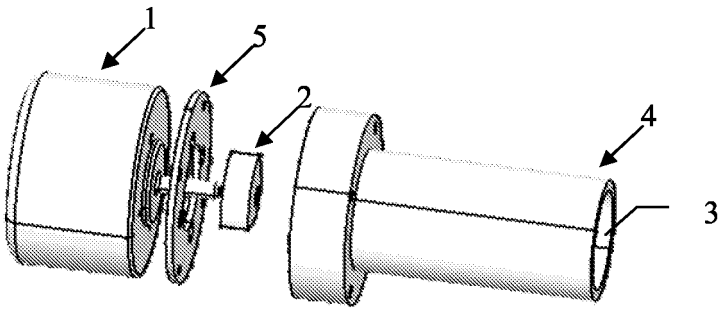

FIG 1

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Description

Field of the invention

[0001] The present invention relates to a vibration unit, comprising a grip or a contact surface, to be mounted detachably on exercise appliances or on a body part.

Background of the invention

[0002] It is known that vibrations in exercise equipment or free weights, enhances the effect of the exercise on the muscles.

[0003] In US 5,813,951 an exercise machine with a permanently attached vibration unit is disclosed.

[0004] It is also known to build in vibration units in free weights. See for example US 6,039,679 and US 5,868,653.

[0005] There are many different machines in a gym, representing a considerable value. To replace a set of ordinary machines with a set of machines equipped with built-in vibration units would be very costly. Machines with vibration units are therefore seldom or never seen.

Summary of the invention

[0006] The present inventor has realized that it would be advantageous if external detachable vibration units could be fitted on existing machines. The gym owner would then be able to lend or let a number of such detachable units to customers using the gym. Alternatively, individuals can buy such units themselves, and bring the units with them to any gym, or use them when exercising at home. The units could then be designed according to individual preferences as regards grip shapes, vibration amplitudes, etc. The grips may also be designed to suit people with rheumatism, for example in the form of spherical grips. Detachable vibration units may also be applied directly on the body of the individual doing exercises, such as on his/her chest, arm or leg.

[0007] The invention relates to a vibration unit with a vibration generating element. According to the invention, the vibration unit comprises a mounting device for mounting the unit detachably on an exercise machine or on a part of the body.

[0008] According to some embodiments of the invention, the mounting device is adapted for application around or inside a handle on an exercise machine.

[0009] According to other embodiments of the invention, the mounting device is adapted for application on the frame of an exercise machine or on a body part, by means of various devices.

[0010] The invention is defined in the appended Claim 1, whereas advantageous embodiments thereof are defined in the dependent claims.

Brief description of the drawings

[0011] Below, the invention will be described in detail, with reference to the attached drawings, of which:

Fig. 1 is a view in perspective of a vibration unit with a grip in accordance with the invention;
Figs. 2A and 2B are views in perspective of ball-shaped knob grips;
Fig. 3 is a view in perspective of a vibration unit, attachable by means of straps;
Fig. 4 is a view in perspective of a vibration unit in the form of a wrist strap;
Fig. 5 is a view in perspective of a vibration unit, attachable to an exercise machine by means of a plate;
Fig. 6 is a view in perspective of a vibration unit, attachable by means of a plate provided with damping springs or damping materials;
Fig. 7 is a view in perspective of an attachment plate;
Fig. 8 is a view in perspective of a vibration unit, built into a tubular pad;
Fig. 9 is a view in perspective of a vibration unit, built into a pad in the form of a seat; and
Fig. 10 is a view in perspective of a vibration unit, built into a pad in the form of a back support.

Detailed description of preferred embodiments

[0012] The invention generally relates to vibration units, in particular to movable vibration units that can be attached to various exercise machines and appliances. The vibration unit can be built into grips and other surfaces in contact with the body, comprising exercise machines for leg kicks, knee bends etc.

[0013] The invention comprises an external vibrating grip, which can be mounted on exercise machines, home gym appliances, free weights, bicycles, bars, etc. The grip is connected to a vibration generating element. Such elements are known per se, and can consist of two motors, each fitted with an eccentric load, causing vibrations when the motors rotate. Each motor is mounted on a steel frame, which in turn can be mounted on certain exercise machines by means of a mounting device. The unique aspect of the invention is the fact that it is movable, which enables gyms, rehab centres and private individuals to develop both their exercise appliances and their training methods. Gyms and rehab centres do not have to buy new machines, but rather attachable vibration units, in order to offer their customers more efficient and reliable training. The inventive concept also comprises the use of vibrating plates that can be attached to exercise machines, such as for leg training.

[0014] Fig. 1 shows an embodiment of the vibration unit according to the invention. The vibration unit comprises a motor 1 with an eccentric load 2. The motor 1 is powered by a voltage of 12 V or more, depending on the motor power required. The voltage is stepped down from

230 V or supplied from a battery. The exercise machine can be fitted with an outlet for 12 V, to simplify mounting and power supply of the vibration unit. The battery can be external to the device, or be fitted inside the grip. The motor 1 is fitted to a mounting device, here shown in the form of a grip 4, directly as shown or via a washer 5, depending on the type of motor used. The mounting device 4 is mounted on the chosen machine to enable the transfer of the vibrations. The mounting device may be mounted on the outside of the machine or inside it, depending on the type of machine.

[0015] If the unit is mounted inside the machine, the mounting device is provided with a plug section for connection to the inside of a handle on the machine. The plug section preferably comprises an expansion mechanism, which can be activated via a lever or the like. The expansion mechanism is lockable, to keep the vibration unit securely in place.

[0016] If the unit is to be mounted on the outside of the machine, the mounting device is provided with an encompassing element 3, preferably in the form of a channel through the grip 4. The vibration unit would then suitably be fitted on some existing handle on the machine, using screws or the like.

[0017] Figs. 2A and 2B show an alternative embodiment of the vibration unit according to the invention. All parts and functions correspond to those described in relation to Fig. 1, except that the motor is enclosed in a ball shape 6. This will make it possible for a rheumatic to exercise his hand mobility.

[0018] The ball comes in two variants. In the first variant, shown in Fig. 2A, the motor is enclosed in a ball grip through which a cylindrical channel 7 extends. The handle of a machine is inserted through this channel, to enable the transfer of vibrations to the machine. In the second variant, shown in Fig. 2B, there is no channel but a small grip 8, extending from the ball. This grip can be applied to the outside or the inside of an exercise machine in the same manner as the embodiment of Fig. 1.

[0019] The vibration unit of the invention can also be attached to other parts of exercise machines than their handles. Fig. 3 shows a vibration unit that can be attached to the machine frame. The function and purpose of the unit is the same.

[0020] The motor and the vibration-generating load are built into a body 9, made of metal or plastic, depending on the intended use. The handle or other machine part to which the unit is to be attached rests in the concavity 10 on the unit. The concavity is adapted to fit cylindrical objects and tubes. The unit can also be manufactured without any concavity, to be mountable on machines with square tubes or on flat surfaces or plates.

[0021] The vibration unit is attached by means of straps 11, screws or plates as detailed below.

[0022] Fig. 4 shows an alternative embodiment in the form of a wrist strap. The purpose of the wrist strap 12 is the same as above. The difference is that the strap can be attached to both machines and body parts, such as an arm or a leg. In this case, too, the size of the motor may vary, according to the desired power level. Motors 13 may advantageously be distributed around the periphery of the strap. The size of the motors 13 may range upwards from small vibration generators of the type used in mobile phones. The strap can also be attached to exercise machines, such as on cylindrical pads used on leg extension and leg curl machines (see below).

[0023] Considering that each manufacturer provides different exercise machines for different exercises, and that machines from different manufacturers are different from each other, several variants will be needed to solve the problem of training with the current machines.

[0024] The following three embodiments using plates have the same function and purpose as above. Fig. 5 shows a vibration unit with a motor and a load, enclosed in a box 14, which creates the vibrations. The box is attached to a plate 15, which in turn attaches to the exercise machine for transmission of vibrations to the machine. The box is mounted on the machine by means of screws, straps or clamps.

[0025] Fig. 6 shows a larger plate 16, which is suited for attachment to foot plates of leg extension machines. The motor or motors, with one or several eccentric vibration generating loads, are placed inside a box 17. There may be several boxes on the plate, depending on the purpose of the unit. The plate is also provided with spring elements 18, which prevent the vibrations from spreading to the entire machine. The spring elements 18 also make it easier for the motor to cause the plate to vibrate, since the plate and the machine otherwise would be rigidly attached to each other. Thus, the user puts his feet against the plate 16, the spring elements 18 being located between the plate 16 and the machine. The spring elements may be made of rubber or plastic, or may be some kind of steel springs. The spring elements may be fitted to the centre of the plate, in which case the box will be placed on one side thereof. The plate is attached by means of screws, or using a threaded bar and nuts. The screws extend through the plate of the exercise machine (where the feet are placed during exercise), and either through the springs 19 and then through the plate, or directly through the plate 16. The holes in the plate may be through holes or threaded holes.

[0026] Fig. 7 shows a mounting device, consisting of a separate plate 20, which is attached to the exercise machine, and to which a plate 16 such as the one in Fig. 6 is attached. The mounting plate 20 is first clamped or screwed to the exercise machine, and the plate 16 of the vibration unit is then screwed to the mounting plate 20.

[0027] A machine for leg extension exercises and the like is provided with an external pad, which may be replaced by a vibration unit according to the invention. Fig. 8 shows a pad 24, fitted with an internal vibration unit. The vibrations are caused by an eccentric load 22, which is made to rotate by a motor 23, located inside the pad 24. The size and number of motors in the pad may vary, depending on the desired effect. The pad is mounted on

the machine in the same way as the original pads, but may alternatively be strapped or clamped to the machine. The tube of the machine is passed through a channel 25 in the pad, and secured. The pad 24 may be round or flat. As noted above, a wrist strap 12 can alternatively be mounted on the original pad.

[0028] In other machines, the seat or back support may be replaced. Figs. 9 and 10 show pads forming a seat support 26 and a back support 27, respectively, in accordance with the invention. The seat support 26 and the back support 27 function in the same way as the pad in Fig. 8, and can be attached to exercise machines as well as exercise benches. The vibrations are caused by an eccentric load being rotated by one or several motors, depending on the intended effect. The motors are enclosed in rectangular boxes 28 or in cylinders. The seat and back supports can be of various shapes, to fit different brands of machines and benches without changing their appearance. The pads may be attached by means of a mounting plate as indicated in Fig. 7.

[0029] A person skilled in the art will appreciate that there are other possible ways of attaching the vibration unit of the invention. The scope of the invention is determined only by the appended claims.

Claims

1. Vibration unit, comprising a vibration generating element (1, 2, 13, 23), **characterized by** a mounting device (3, 4, 7, 8, 10, 11, 12, 15, 25) for mounting the unit detachably on an exercise appliance or a body part.

2. Vibration unit according to claim 1, **characterized in that** said mounting device comprises a plug section (4) for internal attachment to a handle.

3. Vibration unit according to claim 2, **characterized in that** said plug section comprises an expansion mechanism.

4. Vibration unit according to claim 1, **characterized in that** said mounting device comprises an encompassing section (3, 7, 25) for external attachment.

5. Vibration unit according to claim 4, **characterized in that** said encompassing section comprises a grip (4, 8).

6. Vibration unit according to claim 5, **characterized in that** said grip is provided with a ball (6) for gripping by a hand.

7. Vibration unit according to claim 4, **characterized in that** said encompassing section comprises a pad (24) for body contact.

8. Vibration unit according to claim 7, **characterized in that** said pad (24) has the shape of a hollow cylinder.

9. Vibration unit according to claim 4, **characterized in that** said encompassing section comprises a strap (12) for attachment around a body part, such as an arm or a leg.

10. Vibration unit according to claim 1, **characterized in that** said mounting device (10, 11, 15, 16) is designed to be attached to the frame of an exercise appliance.

11. Vibration unit according to claim 9, **characterized in that** said mounting device comprises an encompassing section (10) and straps (11) for external attachment.

12. Vibration unit according to claim 1, **characterized in that** said mounting device comprises a plate (16) with damping elements (18, 19) to prevent vibrations from spreading to other parts of the exercise appliance than the part being in contact with the body.

13. Vibration unit according to claim 1, **characterized in that** said mounting device is attached to a pad in the form of a seat support (26) or a back support (27).

14. Vibration unit according to any one of claims 1 to 13, **characterized in that** said vibration generating element comprises a number of vibration motors (13, 23).

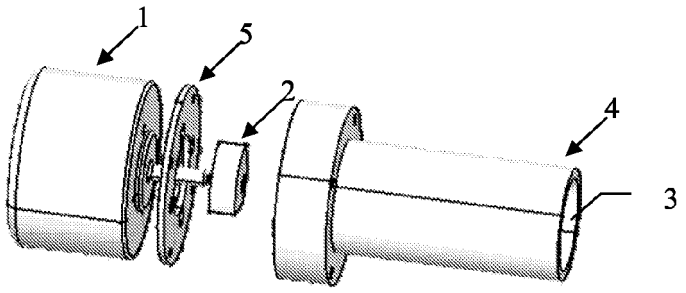

FIG 1

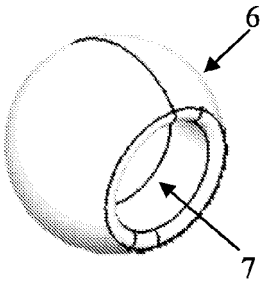

FIG 2A

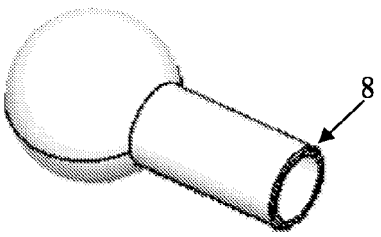

FIG 2B

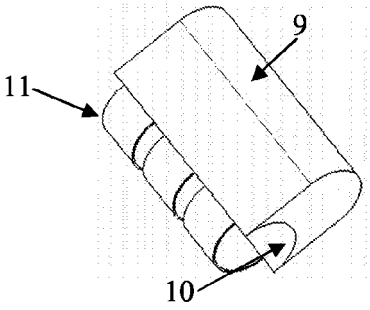

FIG 3

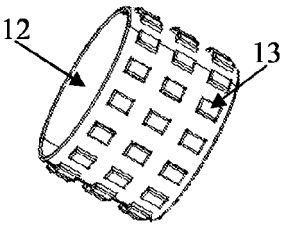

FIG 4

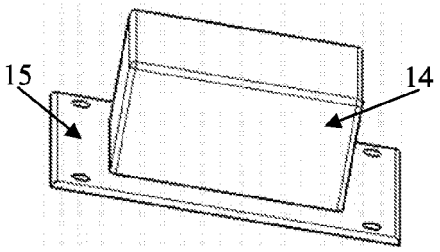

FIG 5

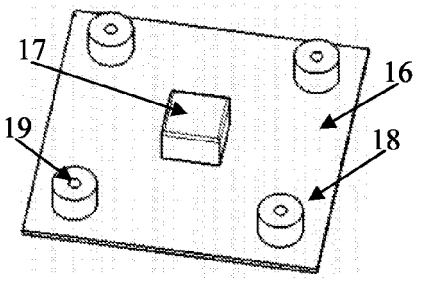

FIG 6

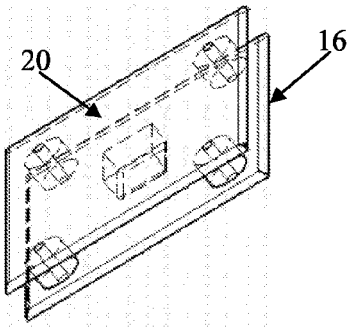

FIG 7

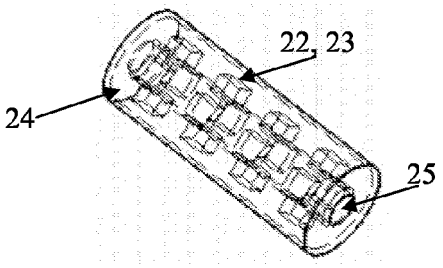

FIG 8

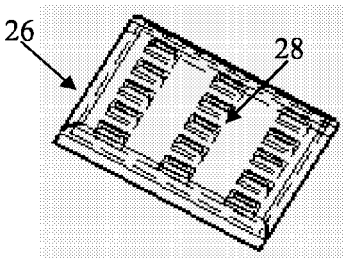

FIG 9

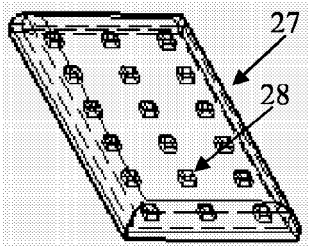

FIG 10

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EUROPEAN SEARCH REPORT

Application Number
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TECHNICAL FIELDS SEARCHED (IPC)

A63B
A61H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	7 December 2005	Lundblad, H

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EUROPEAN SEARCH REPORT

Application Number
EP 05 10 6019

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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