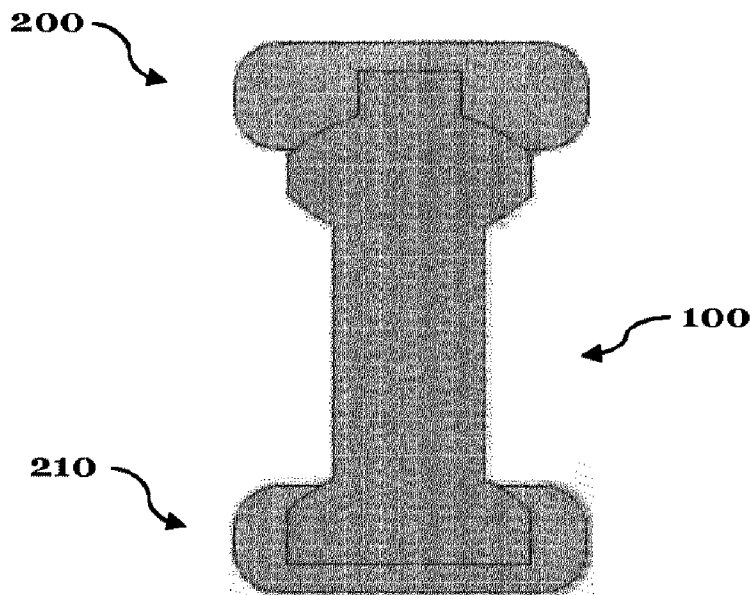




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(54) Title: TRAINING SYSTEM FOR IMPROVING THE MUSCLE STRENGTH



(57) Abrégé/Abstract:

Training system, comprising: at least one bottle (100, 100'), preferably a drinking bottle, comprising: at least one weight coupling section at which at least one weight (200, 210, 200', 210') can be arranged; at least one weight (200, 210, 200', 210') adapted to be arranged at the weight coupling section of the bottle (100, 100'), wherein the bottle (100, 100') and/or the weight (200, 210, 200', 210') comprise locking means by which the bottle (100, 100') and the weight (200, 210, 200', 210') can be releasably locked.

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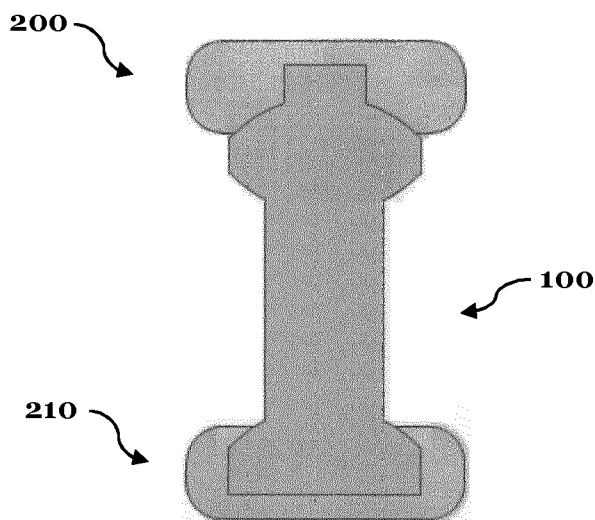


Fig.3

(57) Abstract: Training system, comprising: at least one bottle (100, 100'), preferably a drinking bottle, comprising: at least one weight coupling section at which at least one weight (200, 210, 200', 210') can be arranged; at least one weight (200, 210, 200', 210') adapted to be arranged at the weight coupling section of the bottle (100, 100'), wherein the bottle (100, 100') and/or the weight (200, 210, 200', 210') comprise locking means by which the bottle (100, 100') and the weight (200, 210, 200', 210') can be releasably locked.

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Training system for improving the muscle strength

Field of the invention

5 The present invention relates to a training system for improving the muscle strength comprising at least one bottle, preferably a drinking bottle, as well as to a corresponding method for improving the muscle strength using such training system.

Technical background

From the prior art, dumbbell-shaped drinking bottles are known usable for performing training sessions (*e.g.* biceps exercises, triceps exercises, latissimus exercises, etc.). Drinking bottles usable for performing muscle exercises are, for
10 example, disclosed in documents US D489,001 S and DE 197 48 903 A1. However, the weight of these drinking bottles is predetermined by the weight of the empty bottle and the beverage, *i.e.* the weight cannot be adjusted to the specific training level of the person performing the muscle exercises. Moreover, it is also not possible to use such
15 drinking bottle within the course of a training plan requiring the use of different weights. Particularly, due to this lack of flexibility, there is only a limited scope of use of such drinking bottles for performing respective training sessions.

It is an object of the present invention to provide a training system for improving the muscle strength comprising at least one bottle, preferably a drinking bottle.
20 Particularly, it is an object of the present invention to provide a training system which can be adjusted to the training level of a person and which can be used within the course of a training plan requiring the use of different weights.

Summary of the invention

According to the invention, a training system for improving the muscle strength is
25 provided comprising at least one bottle having at least one weight coupling section at which at least one weight can be arranged. The training system further comprises at least one weight adapted to be arranged at the weight coupling section of the bottle,

wherein the bottle and/or the weight comprise locking means by which the bottle and the weight can be releasably locked together.

It is preferred that the bottle is a drinking bottle (*e.g.* a plastic bottle), preferably filled with an isotonic electrolyte beverage or a protein-containing beverage which can be
5 drunk during and/ or after a training session.

The at least one weight coupling section of the bottle is preferably provided at one end of the bottle, *i.e.* at the top side or the bottom side of the bottle.

The locking means, which can be provided at the bottle and/or at the weight, should provide a secure connection between the bottle and the weight such that a training
10 session can be performed without that the weight drops from the bottle. Preferably the locking means are provided by a click-on/snap-on connection, a press-fit connection, a pin connection or a magnetic lock connection. Notably, in case a connection between the bottle and the weight is provided by means of a press-fit connection, no respective
15 locking means have to be provided at the bottle. In this case, the weight is (at least partially) provided by an elastic material (*e.g.* an elastic plastic material) to facilitate joining the bottle and the weight together.

Therefore, one of the advantages of the present invention is that different weights can be easily arranged at the bottle such that the overall weight of the training system can be adjusted to (i) the training level of the person performing a training session and (ii)
20 muscle exercises requiring different weights.

Preferably, the training system comprises two weights and the bottle comprises two corresponding weight coupling sections, preferably provided at opposite sides of the bottle (*e.g.* at the top and bottom side of the bottle).

Thereby, a preferred essentially symmetrical arrangement of the training system can
25 be provided, which is particularly advantageous for performing muscle exercises, since no unequal distribution of the weight has to be compensated by the person performing a muscle exercise. However, in some embodiments (*i.e.* for some muscle exercises), it can be an advantage to have a non-symmetric arrangement such that a person has to compensate said unequal distribution of the weight.

30 It is preferred that the arrangement of the bottle and the two weights is essentially dumbbell-shaped, wherein preferably already the bottle is essentially dumbbell-

shaped. By means of such an arrangement a specifically favorable distribution of mass of such an arrangement can be provided.

Preferably, already the bottle has an essential dumbbell-shape. Thereby, a person can use the bottle for performing muscle exercises without an additional weight. Once the
5 person reached a higher training level or in case a higher weight is required for a specific muscle exercise, an additional weight can be arranged at the bottle, thereby increasing the overall weight of the system provided by the weight of the bottle and the additional weight(s).

It is preferred that the bottle comprises at least one gripping section (*e.g.* a section
10 comprising finger-shaped depressions or a perforated or rubberized surface) for facilitating gripping of the bottle during a training session. Preferably, such gripping section is provided equally spaced from the top and bottom side of the bottle (*i.e.* in the middle of the bottle).

In a preferred embodiment of the invention the training system comprises two bottles,
15 wherein these bottles are preferably identical. Thereby, muscle exercises requiring two training devices can be performed with the present training system.

It is further preferred that the bottle further comprises at least one cord coupling section at which at least one elastic cord can be arranged. In such embodiment, the training system further comprises at least one elastic cord adapted to be arranged at
20 the cord coupling section of the bottle, wherein the bottle and/or the elastic cord comprise locking means by which the bottle and the elastic cord can be releasably locked.

Preferably, the elastic cord comprises at least one ring section which can be slipped over a bottle, thereby, providing a press-fit connection between the bottle and the
25 elastic cord.

In a preferred embodiment, the system comprises one bottle onto which a ring section of an elastic cord can be slipped over. A muscle exercise can be performed, for example, by holding the bottle at the gripping section and by standing onto the other end of the elastic cord at the same time such that respective pull exercises can be
30 performed.

In a further preferred embodiment, the elastic cord comprises two ring sections at its opposite sides/ends such that each ring section can be slipped over one bottle. A

muscle exercise can be performed, for example, by holding each bottle at its gripping section and pressing/pushing the bottles apart against the tensioning force of the elastic cord.

Notably, in further preferred embodiments, it is possible to arrange several (*e.g.* two) elastic cords at one or two bottles. For example, it is possible to arrange two elastic
5 cords at one bottle and a person performing respective exercises holds the bottle with two hands at opposite sides of the bottle and stands on the free ends of the elastic cords at the same time.

It is further preferred that the training system further comprises at least one
10 computing device, for example, (i) for storing profiles of predetermined movements which can be made with the training system, different training schemes, the progress made during a training session and/or the progress between training sessions; (ii) for evaluating the movements during muscle exercises, the progress made during a training session and/or the progress between different training sessions, (iii) for
15 providing training schemes, preferably adapted to the progress made during a training session and/or to the progress made between different training sessions. Preferably, the computing device is provided in at least one weight, the elastic cord and/or in at least one separate computing device (*e.g.* a computer or a smartphone). Notably, the training system can comprise one or more computing devices.

It is preferred that the training system further comprises detection means for
20 detecting and/or counting the movements performed during a training session, wherein the detection means are preferably provided within at least one weight and/or within the elastic cord. Such detection means are, for example, be provided by a time counter, a motion counter, a motion sensor and/or a strength sensor. The drinking
25 bottle may also comprise some identification means (*e.g.* a bar code applied onto the surface or a RIFD-chip arranged within the material of the drinking bottle). Such identification means provide information the content of the drinking bottle.

Preferably, the system further comprises feedback means for providing a feedback during a training session, in particular with respect to the specific muscle exercises to
30 be made by a person, the training extent, the accurateness of the performed movements, the progress made during a training session and/or the progress made between different training sessions. Such feedback means are preferably provided by a digital display, an audio or voice output and/or an indicator light.

It is further preferred that at the beginning of a training session, the person receives information by the feedback means (*e.g.* by a digital display) with respect to the specific exercises he has to perform, the numbers of repetitions, the weight(s) or elastic cord he should use, etc. This information is preferably provided by the
 5 computing device and is preferably based on the training progress between different training sessions. Alternatively, a predetermined standard training scheme can be provided which is selected from a group of predetermined training schemes.

Preferably, in the course of a training session, the detection means capture information about the repetitions made, the accurateness of the movements and the
 10 feedback means provide a corresponding feedback. For example, once a person made the intended repetitions a sound feedback (*e.g.* a beep sound) is provided.

It is further preferred that the bottle, at least one weight and/or the elastic cord comprise at least one electronic interface adapted to provide data exchange with a computing device (*e.g.* a computer or a smartphone). The electronic interface is
 15 preferably a Bluetooth™ interface, a Wi-Fi-interface or a USB interface. A respective computer program adapted to process the provided data can be stored on the computing device with which respective charts, evaluations of the training session(s), calculations and new/adapted training schemes can be provided.

Preferably, the weight(s) and/or the elastic cord(s) comprise identification means,
 20 preferably respective bar codes or RIFD-chips (*“Radio-Frequency-Identification chips”*) providing at least the information about the weight or the elasticity of the elastic cord. It is preferred that these information can be detected by the detection means and can be provided to the computing device such that these information can be stored, evaluated and considered when providing an adapted training scheme.

25 The present invention further relates to a method for improving the muscle strength using a training system as described above, wherein the method is preferably a non-therapeutic method and thus, only used for improving the general physical comfort of a person by improving the muscle strength.

Description of the preferred embodiments

30 In the following, the invention is described exemplarily with reference to the enclosed figures, in which

Figure 1 is a schematic view of a drinking bottle;

Figure 2 is a schematic view of two weights;

Figure 3 is a schematic view of the drinking bottle shown in figure 1 at which the weights shown in figure 2 are arranged at the top and bottom side of the drinking
5 bottle;

Figure 4 is a schematic view of an elastic cord;

Figure 5 is a schematic view of the elastic cord shown in figure 4 coupled to two identical drinking bottles of figure 1;

Figure 6 is a schematic view of a person using two drinking bottles of figure 3;

10 **Figure 7** is a schematic view of a person using the arrangement shown in figure 5.

Figure 1 is a schematic view of a drinking bottle 100 having an essentially rotation-symmetric shape with respect to an axis of rotation 105. The drinking bottle 100 has a bottom side 110 and a top side 115 at which a bottle cap (not shown), *e.g.* a twist-off
15 cap, is arranged. The drinking bottle 100 is a hollow vessel, which can be filled with a liquid (*e.g.* an isotonic beverage or a protein-containing beverage).

Although, the shown preferred embodiment of the drinking bottle 100 is rotationally symmetric with respect to the axis of rotation 105, in other embodiments, the bottle may have a different cross-section (*e.g.* a polygonal or elliptical cross-section) as long
20 as the bottle can be connected with a weight and/or an elastic cord, *i.e.* as long as corresponding geometries are provided.

As can be taken from figure 1, the drinking bottle 100 is essentially dumbbell-shaped, *i.e.* the drinking bottle 100 has a first bulk 120 near the bottom side 110 and a second bulk 125 near the top side 115 of the drinking bottle 100.

25 These bulks 120, 125 can be provided hollow, in order to increase the capacity for the liquid or can be provided as an integral/solid part, in order to provide an increased weight of the drinking bottle 100, *i.e.* in order to provide a minimum weight of the drinking bottle 100, even if there is no liquid in the drinking bottle 100 such that also an empty drinking bottle 100 can be used for performing respective exercises.

At the middle section, the drinking bottle 100 comprises a gripping section 130 (*e.g.* a section comprising finger-shaped depressions or a perforated or rubberized surface) for facilitating gripping of the bottle during a training session.

Preferably, the drinking bottle 100 comprises some identification means (*e.g.* a bar
5 code applied onto the surface of the drinking bottle 100 or a RIFD-chip arranged within the material of the drinking bottle 100). It is preferred that these identification means provide information about the content of the drinking bottle 100. Preferably, the information includes the bottle volume, caloric content, protein content, for example. Preferably, this information is used by a computing device instructing a
10 person performing a training session when a drink from the drinking bottle 100 should be taken during and / or after a training session. Also, the information may be used to modulate exercise intensity and duration in order to personalize the training.

Figure 2 is a schematic view of a first weight 200 and a second weight 210. In the shown embodiment, the first weight 200 can be arranged at the top side 115 of the
15 drinking bottle 100 and the second weight 210 can be arranged at the bottom side 105 of the drinking bottle 100. The weights 200, 210 are such dimensioned that they can be arranged at the drinking bottle 100 by means of a press-fit connection. In other words, the weights 200, 210 can be pressed onto the respective side of the drinking bottle 100 until a respective press-fit connection is provided. However in further
20 embodiments a click-on/snap-on connection provided, for example, by means of elastic locking arms or snap-in levers can be used instead of a press-fit connection.

Preferably, the weights 200, 210 comprise identification means (*e.g.* a bar code or a RIFD-chip) providing information about the weight of each of the weights 200, 210.

It is preferred that the weights 200, 210 further comprise detection means for
25 detecting and counting the movements performed during a training session. Preferably, the detection means are selected from the group comprising time counters, motion counters and/or motion sensors.

By such detection means the movements/repetitions performed by a person during a training session can be detected and can be used for evaluating a training session and
30 for providing training schemes adjusted to the training level of the person, wherein this information can also be used for providing a feedback during a training session.

At least one of the weights 200, 210 further comprises feedback means, (*e.g.* a digital display, a voice output, a sound output or an indicator light) providing feedback information to the person performing a training session, in particular with respect to the training extent, the accurateness of the performed movements, the progress made during a training session and/or the progress made between different training sessions.

For example, a sound beep can indicate that a predetermined number of repetitions of a specific muscle exercise have been performed and that the person can continue with the next muscle exercise, wherein by means of a digital display and/or a voice output, the information can be provided which specific muscle exercise has to be done next (*e.g.* according to a predetermined training scheme/plan), how many repetitions of the muscle exercise have to be done and/or whether the muscle exercises are performed with a sufficient accurateness compared with an ideally performed muscle exercise. Notably, the latter information can also be provided after the training session (*e.g.* once the detected information has been transmitted to and evaluated by a computing device, like a computer or a smartphone).

The weights 200, 210 preferably comprise at least one electronic interface (*e.g.* a Bluetooth™ interface, a Wi-Fi interface or a USB interface) adapted for a data exchange (*e.g.* for exchanging information about the used weights, the detected movements, the counts, the training time, etc.) with a computing device (*e.g.* a computer or a smartphone).

In a preferred embodiment, the weights 200, 210 are provided by a plastic material which can comprise elastic sections in order to facilitate a press-fit connection between the drinking bottle 100 and the weights 200, 210. For increasing/adjusting the weight of the weights 200, 210 different materials (*e.g.* metal blocks or metal sheets) or hollow spaces can be incorporated in the weights 200, 210.

It is further preferred that the training system according to the present invention comprises different weights in order to be able to adjust the weight of the bottle-weight-arrangement to a training level of a person or to use different weights for different muscle exercises.

Figure 3 is a schematic view of the drinking bottle 100 (as shown in figure 1) at which the weights 200, 210 (as shown in figure 2) have been arranged by means of a

press-fit connection. As can be taken from figure 3, the arrangement of the drinking bottle 100 and the two weights 200, 210 is essentially dumbbell-shaped.

Figure 4 is a schematic view of an elastic cord 300 having a first ring section 305 and a second ring section 310 which are arranged at opposite sides/ends of the elastic cord
 5 300. Between the ring sections 305, 310, an elastic middle section 315 is provided.

It is preferred that the elastic cord 300 comprises identification means (*e.g.* a bar code or a RIFD-chip) providing information about the elasticity of the elastic cord 300 and that the elastic cord 300 comprise detection means (*e.g.* a time counter, a motion counter, a motion sensor and/or a strength sensor).

10 It is further preferred that the elastic cord 300 comprises feedback means for providing a feedback during or after a training session, in particular with respect to the training extent, the accurateness of the performed movements, the progress made during a training session and/or the progress made between different training sessions. These feedback means are preferably selected from the group comprising a
 15 digital display, a voice output, a sound output or an indicator light.

The elastic cord 300 preferably comprises at least one electronic interface (*e.g.* a Bluetooth™ interface, a Wi-Fi interface or a USB interface) adapted for a data exchange (*e.g.* for exchanging information about the used elastic cord, the detected movements, the counts, the training time, etc.) with a computing device (*e.g.* a
 20 computer or a smartphone).

It is preferred that the training system comprises several elastic cords having a different elasticity in order to be able to select a specific elastic cord adjusted to the training level of a person or for performing different muscle exercises.

Figure 5 is a schematic view showing the elastic cord 300 of figure 4 wherein the
 25 elastic cord 300 (*i.e.* the ring sections 305, 310) is arranged on two drinking bottles 100, 100'. Even if such an arrangement with two drinking bottles 100, 100' is preferred, it is also possible to use the elastic cord 300 with only one drinking bottle 100. In such case, a muscle exercise can be performed, for example, by holding the drinking bottle 100 at the gripping section 130 and by standing onto the other end of
 30 the elastic cord 300 at the same time.

Figure 6 shows a schematic view of a person during a training session using two drinking bottles 100, 100' with respective weights 200, 210, 200', 210'.

In the course of a training session, it is preferred that at the beginning, the feedback means (*e.g.* a digital display) provided at least at one of the weights 200, 210, 200', 210' provides information about the specific muscle exercise which should be performed by the person (*e.g.* a biceps exercise, a triceps exercise, a shoulder exercise, a latisiums exercise, etc.), the repetitions to be made, the weights which should be used etc. This information can be based on a former training session (*e.g.* on a reached training level). In this respect, a personalized training scheme or a predetermined standard training scheme selected from a group of predetermined training schemes can be provided.

During a training session, the feedback means preferably provide a feedback with respect to the remaining repetitions, the accurateness of the performed movements, the progress made during a training session, and/or whether a person should take a drink from the drinking bottles 100, 100'.

During the training or after the training, the detected information (*e.g.* about the used weights/elastic cords, the performed muscle exercises, the made repetitions, the accurateness of the performed movements, etc.) can be transferred to the computing device storing and evaluating the transferred information.

Figure 7 is a schematic view of a person performing a training session with the arrangement shown in figure 5 (*i.e.* two drinking bottles 100, 100' and an elastic cord 300).

The method for improving the muscle strength using the above described training system is preferably a non-therapeutic method and thus, only used for improving the general physical comfort of a person by improving the muscle strength.

-In a preferred embodiment, a standard setting of the training device has been developed which comprises a detection mean based on simple movement using the pack and the product feature (drinking bottle) and a feedback system providing information about the intensity of the exercise done to the computing device. The computing device provides instruction when a drink from the drinking bottle should be taken during the training session.

-In another embodiment, a personalized setting of the training device has been developed which provides Product exercise developed in function of the used. Feedback system provides in function of the product, information

about the intensity of the exercise done. The computing device provides instruction when a drink from the drinking bottle should be taken during the training session.

CLAIMS:

1. A training system, comprising:
 - at least one drinking bottle comprising:
 - an identification means for transmitting nutritional information about a drink stored in the at least one drinking bottle;
 - at least one weight coupling section at which at least one weight can be arranged;
 - the at least one weight adapted to be arranged at the at least one weight coupling section of the at least one drinking bottle, wherein the at least one drinking bottle and/or the at least one weight comprise locking means by which the at least one drinking bottle and the at least on weight can be releasably locked,
 - wherein the locking means are provided by means of a click-on connection, a press-fit connection or a magnetic lock connection, so that different weights of the at least one weight can be easily arranged at the at least one drinking bottle such that an overall weight of the training system can be adjusted to (i) a training level of a person performing a training session and (ii) muscle exercises requiring different weights;
 - at least one computing device for storing electronic profiles of predetermined movements which can be made with the training system during the training session, different training schemes, progress made during the training session and/or for storing progress between different training sessions; and
 - a feedback means for providing a feedback during or after the training session;
 - wherein the computing device is configured to receive the nutritional information from the identification means for instructing a user performing a training session to drink from the drinking bottle based on the stored electronic profiles via the feedback means.

2. The training system according to claim 1, wherein the at least one weight comprises two weights and the at least one drinking bottle comprises two weight coupling sections provided at opposite sides of the at least one drinking bottle.

3. The training system according to claim 2, wherein the opposite sides are a bottom side and a top side of the at least one drinking bottle.
4. The training system according to one of the claims 2 or 3, wherein an arrangement of the at least one drinking bottle and the two weights is substantially dumbbell-shaped.
5. The training system according to claim 4, wherein the at least one drinking bottle is substantially dumbbell-shaped.
6. The training system according to any one of claims 1 to 5, wherein the at least one drinking bottle comprises at least one gripping section for holding the at least one drinking bottle during and/or after the training session.
7. The training system according to any one of claims 1 to 6, wherein the at least one drinking bottle consists of two drinking bottles.
8. The training system according to claim 7, wherein the two drinking bottles are two identical bottles.
9. The training system according to any one of claims 1 to 8, wherein the at least one drinking bottle further comprises at least one cord coupling section at which at least one elastic cord can be arranged, wherein the training system further comprises the at least one elastic cord adapted to be arranged at the cord coupling section of the drinking bottle, and wherein the at least one drinking bottle and/or the at least one elastic cord comprise locking means by which the at least one drinking bottle and the at least one elastic cord can be releasably locked.
10. The training system according to any one of claims 1 to 9, wherein the at least one computing device is configured for evaluating progress made during the training session and/or between the training sessions.

11. The training system according to any one of claims 1 to 10, wherein the at least one computing device is configured for providing training schemes adapted to the progress made during the training session and/or to the progress made between different training sessions.
12. The training system according to any one of claims 1 to 11, wherein the at least one computing device is provided with the at least one drinking bottle, the at least one weight, the at least one elastic cord and/or means of at least one separate computing device.
13. The training system according to any one of claims 1 to 12, wherein the system further comprises detection means for detecting and/or counting movements performed during the training session.
14. The training system according to claim 13, wherein the detection means are provided within the at least one weight and/or within the at least one elastic cord.
15. The training system according to claim 13 or 14, wherein the detection means are selected from the group comprising a time counter, a motion counter, a motion sensor and a strength sensor.
16. The training system according to any one of claims 1 to 15, wherein the feedback is with respect to a training extent, an accurateness of the performed movements, the progress made during the training session and/or the progress made between different training sessions.
17. The training system according to claim 16, wherein the feedback means are selected from the group comprising a digital display, an audio or voice output and an indicator light.
18. The training system according to any one of claims 9 to 17, wherein the at least one drinking bottle, the at least one weight and/or the at least one elastic cord

comprise at least one electronic interface adapted to provide data exchange with a computing apparatus.

19. The training system according to any one of claims 1 to 18, wherein the computing apparatus is a computer or a smartphone.

20. The training system according to claim 18 or 19, wherein the at least one electronic interface is a Bluetooth interface, a Wi-Fi interface or a Universal Serial Bus interface.

21. The training system according to any one of claims 9 to 20, wherein the at least one weight and/or the at least one elastic cord comprise identification means.

22. The training system of claim 21, wherein the identification means includes bar codes or Radio Frequency Identification Chips configured for providing at least information about the at least one weight or the elasticity of the at least one elastic cord.

23. A method for improving muscle strength using a training system according to any one of claims 1 to 22.

24. The training system according to any one of claims 1 to 22, wherein the at least one computing device is configured for evaluating progress made during the training session and/or between the training sessions.

25. The training system according to claim 24, wherein the at least one computing device is configured for providing training schemes adapted to the progress made during the training session and/or to the progress made between different training sessions.

26. The training system according to any one of claims 1 to 22 or 24 and 25, wherein the system further comprises detection means for detecting and/or counting movements performed during the training session.

27. The training system according to claim 26, wherein the detection means are selected from the group comprising a time counter, a motion counter, a motion sensor and a strength sensor.
28. The training system according to any one of claims 1 to 22 or 24 to 27, wherein the system further comprises feedback means for providing a feedback during or after the training session.
29. The training system according to claim 28, wherein the feedback is with respect to a training extent, an accurateness of the performed movements, the progress made during the training session and/or the progress made between different training sessions.
30. The training system according to claim 28 or 29, wherein the feedback means are selected from the group comprising a digital display, an audio or voice output and an indicator light.

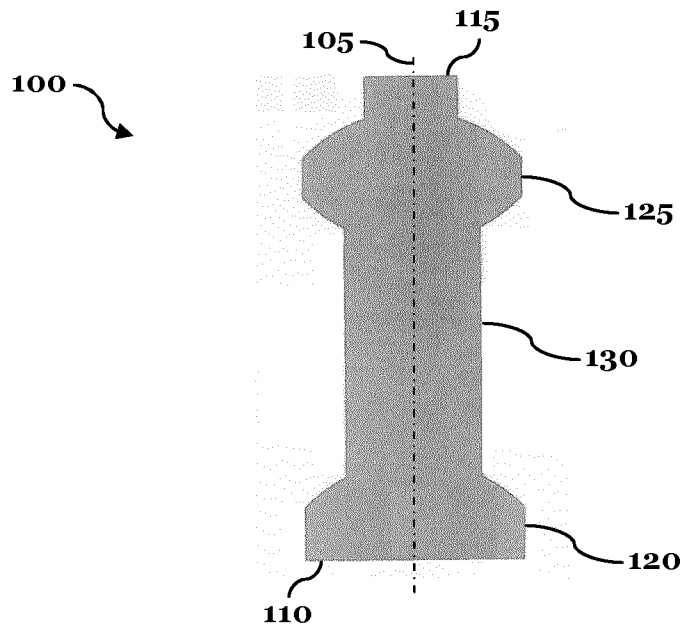


Fig. 1

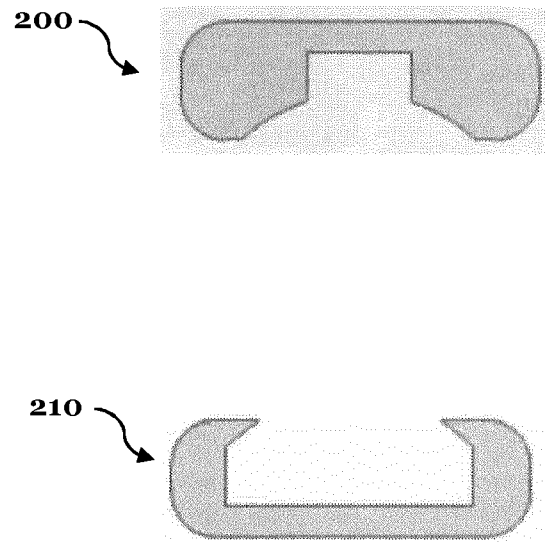


Fig. 2

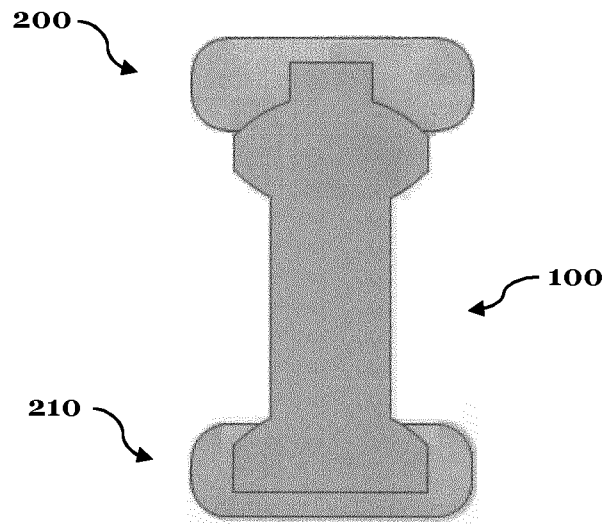


Fig. 3

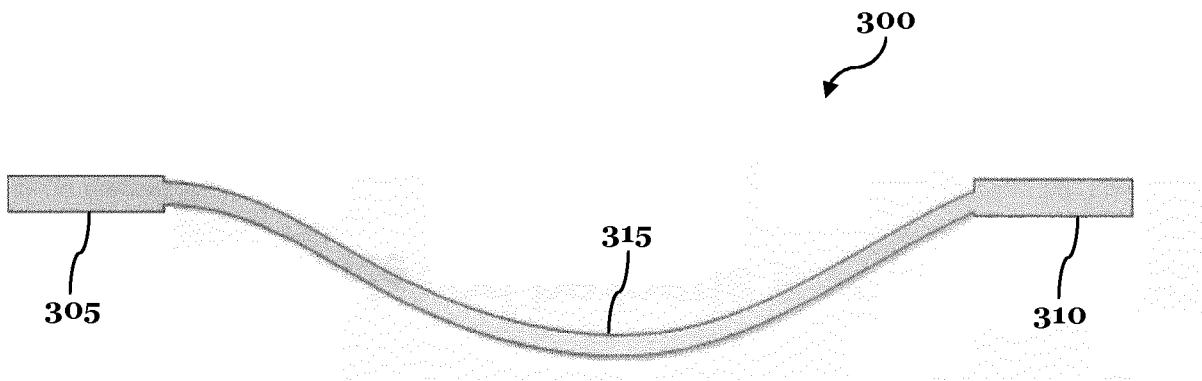
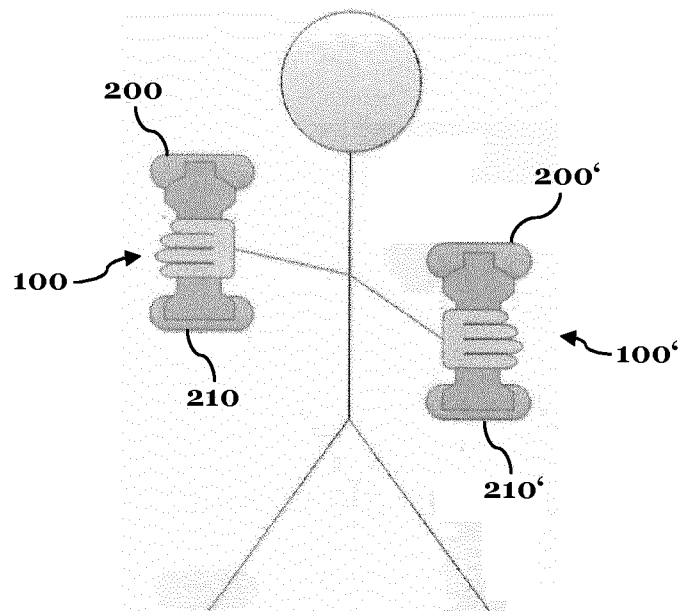
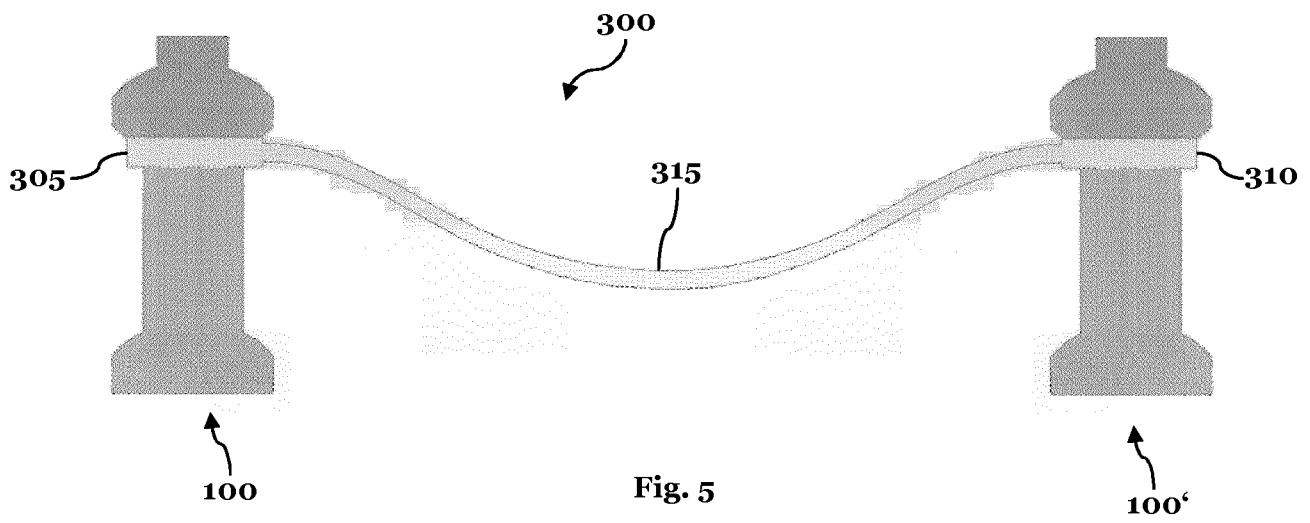


Fig. 4



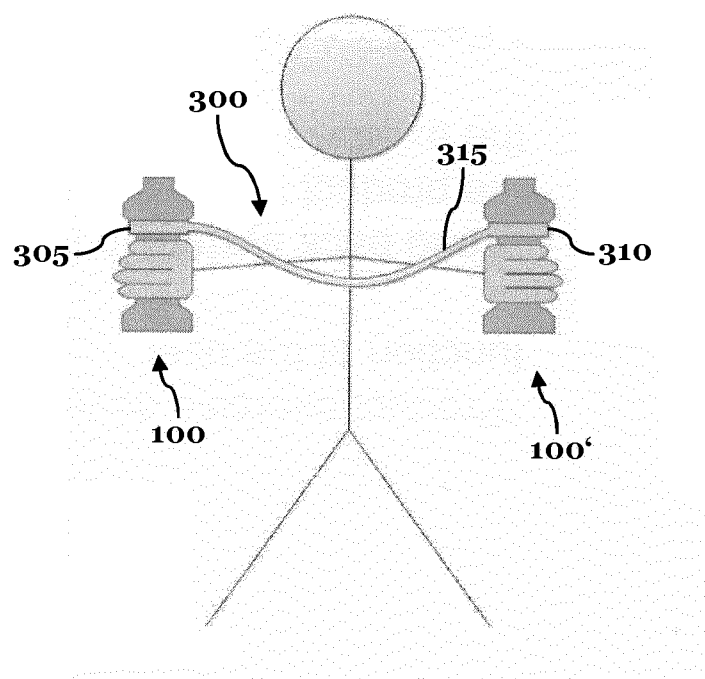


Fig. 7

200



100



210

