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(54) **Apparatus for the performance of gymnastics exercises**

(57) An apparatus (1) is provided for the performance of gymnastics exercises, of the type comprising flexible elastic elements (2) which can be tensioned and defining, during an exercise, a path (3) engaging the human body, comprising a coupling device (4a) placed along the path

(3) and at least one wearable article (5) having an anchoring device (4b) engageable by the coupling device (4a), the wearable article (5) being preferably an improved shoe having the anchoring device (4b) in the sole (6).

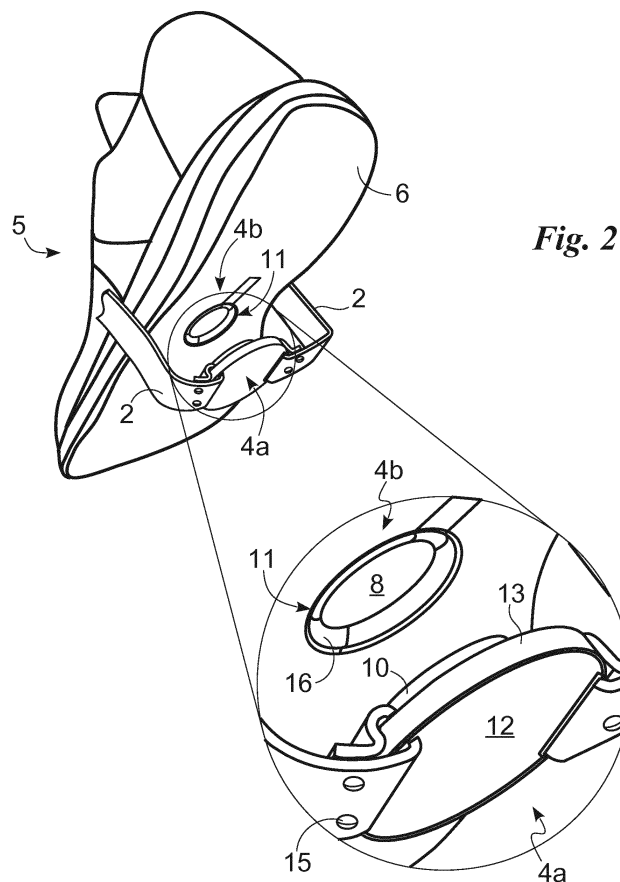


Fig. 2

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Description

[0001] The present invention relates to an apparatus for the performance of gymnastics exercises, in particular an apparatus including flexible elastic elements which can be tensioned, in particular by folding into a loop, as specified in the preamble of the first claim.

[0002] As is known, there are many different devices and instruments for use by fitness enthusiasts and, in particular, for those who do gymnastics.

[0003] Among such prior art devices is an apparatus which comprises elastic elements such as elastic cords or elastic bands of varying length that can be arranged so as to engage parts of the body and then be gradually tensioned in particular with the arms and/or legs.

[0004] Typically, the elastic elements are arranged in a loop or stirrup around one shoe or both shoes and the free ends, possibly equipped with handles, are gripped with one or two hands.

[0005] Movements are then performed to partially or completely stretch and release the elastic elements.

[0006] This specific exercise - like others - may be performed in various ways: standing, lying down, sitting, moving the arms and legs together as desired, or just the arms or just the legs, or using the back, and in any case involving many parts of the body.

[0007] It has been noted that this apparatus is beneficial from many points of view. Numerous exercises can be performed and these are very effective for strengthening, toning and firming the arms, legs, chest, stomach, buttocks, and in practice for training almost all parts of the body.

[0008] Moreover, each person can work gradually and in a manner proportional to his/her capability, increasing the amount of force applied to the elastic elements in time.

[0009] In addition, such apparatus can be used to perform both demanding gymnastics exercises and simple stretching exercises i.e. elongation of the muscles to prevent the formation of lactic acid and promote good joint mobility, as well as exercises to prevent injuries and arthritis.

[0010] The apparatus in question also has the extraordinary advantage of minimal size, and can even be folded and placed in a drawer or in a bag or a suitcase.

[0011] It also has the advantage of not requiring specific environments such as gyms or equipped rooms to be used.

[0012] A further positive aspect of the apparatus in question is that of its reduced cost, permitting the purchase of even several versions thereof, which may differ for example in terms of length and/or resistance of the elastic elements.

[0013] However, alongside said advantages the apparatus briefly described above also has some drawbacks.

[0014] A first drawback lies in the fact that when the elastic elements are stretched with force, typically between the feet and arms, they can slip on the soles of

the shoes and lose contact with them.

[0015] The consequence is a violent contraction of the elastic elements towards the arms, with a sudden loss of balance by the person holding the ends of the elastic elements.

[0016] Another drawback is the need to pay constant attention to the position of the elastic elements while performing the exercises, to prevent them from moving. This reduces the attention paid to the correct and precise performance of the exercises and spontaneously leads to the exertion of less traction force.

[0017] Another drawback is related to a possible or rather probable inaccurate initial positioning of the elastic elements, in particular when they engage a shoe in the manner of a loop or stirrup: the sections extending from the shoe to the arms are extremely likely to be of uneven length.

[0018] The result is an uneven tensioning of the elastic sections, with a consequent component of the forces tending to flex one leg laterally, even when this situation is not envisaged by the exercise being performed.

[0019] A significant loss of time ensues in trying to achieve as precise a positioning of the apparatus as possible every time.

[0020] One major drawback is also related to the fact that the shoe or shoes engaging the elastic elements are damaged when the tensioned elements tend to slide under the sole and/or do not exert balanced forces.

[0021] In this case, the forces tend to deform the sole and even tension it in relation to the upper, producing consequent damage.

[0022] In this situation the technical purpose of the present invention is to devise an apparatus for the performance of gymnastics exercises, including elastic elements, able to substantially overcome the drawbacks mentioned above.

[0023] Within the sphere of said technical purpose one important aim of the invention is to devise an apparatus which prevents slipping of the elastic elements when forces are applied to them and when they are typically extended between the arms and feet, in order to allow the application of greater forces without any problems. Another important aim of the invention is to devise an apparatus with which it is possible to achieve an exact and optimal positioning thereof, thus avoiding the formation of elastic sections of imperfect length and the consequent application of anomalous or unexpected forces on the body of the gymnast.

[0024] Yet another purpose is to make said optimal positioning quick and immediate, to speed up the performance of the exercises.

[0025] A further aim of the invention is to devise an apparatus in which the shoes used are immune to damage caused by the forces applied to them during normal exercises.

[0026] Said technical purpose and specified aims are achieved by an apparatus as claimed in the appended independent Claims.

[0027] The characteristics and advantages of the invention are clearly evident from the following detailed description of preferred embodiments thereof, with reference to the accompanying drawings, in which:

- **Fig. 1** schematically shows merely by way of example a typical gymnastics exercise which can be performed with the apparatus according to the invention;
- **Fig. 2** illustrates a portion of the apparatus according to the invention, at the shoe, and - in an enlarged scale view - an area of the Figure;
- **Fig. 3a** shows an exploded view of a detail of an alternative embodiment of the apparatus; and
- **Fig. 3b** shows the elements in Fig 3a in an assembled position.

[0028] With reference to said drawings, reference numeral **1** globally denotes the apparatus according to the invention.

[0029] The apparatus **1** comprises flexible elastic elements **2** which can be tensioned such as elastic cords or elastic strips or straps of varying lengths - for example, longer than one metre - which at the ends preferably comprise manual means of engagement, such as handles **1a**.

[0030] The apparatus **1** may differ in the specific level of resistance of its elastic elements **2** and the differences may be shown by the colour of said elastic elements.

[0031] For gymnastics or stretching exercises, one or two pieces of apparatus **1** may be used simultaneously and the elastic elements **2** are positioned so as to define in their entirety a path **3** engaging parts of the human body.

[0032] Typically the elastic elements **2** are arranged in a loop or stirrup around a shoe and the free ends or the handles **1a** are gripped with one or two hands, as schematically shown in Fig. 1.

[0033] Alternate and possibly rhythmic movements are then performed to partially or totally stretch and release the elastic elements **2**.

[0034] It is the responsibility of skilled staff to choose or indicate the duration of the exercises, the positions of the elastic elements, the degree of tension and the forces to be applied, the gradualness with which the forces are applied, the movements of the arms and legs while performing the exercises, and whether the gymnastics or stretching exercises should be performed while standing, lying down or sitting, depending on the person's specific needs.

[0035] In any case precise positioning of the elastic elements **2** and the maintenance thereof in the same position during the exercises is a fundamental requirement. To fulfil this fundamental requirement the apparatus **1** comprises, according to the invention, at least one coupling device **4a** integral with said apparatus and placed along the path **3**.

[0036] The coupling device **4a** is stably connected to the elastic elements **2** directly or through a non-elastic

section so as to be functionally coupled thereto.

[0037] For example it may be permanently attached to the apparatus **1** along the path **3**, for example it may be inserted between the elastic elements **2**, to which it is attached as explained below.

[0038] Alternatively, the coupling device **4a** may be positioned along the path **3** each time. In this case, friction and/or folding of the elastic elements **2** in correspondence with the device **4a** is envisaged in order to prevent said device from moving from the position established each time.

[0039] Two or more coupling devices **4a** may also be provided in each apparatus **1**, to identify specific points of use and stabilisation of the apparatus **1**.

[0040] The invention envisages the use of at least one wearable article **5** having at least one anchoring device **4b** engageable by the coupling device **4a**.

[0041] The wearable article **5** may be a garment, an item of clothing, one or more bands applied in the manner of bandages, or a belt, one or more straps or other article. Preferably and advantageously the wearable article **5** is defined by an improved shoe, a shoe also meaning a pair of shoes.

[0042] The coupling device **4a** and the anchoring device **4b** are engageable with one another by means of an advantageous combination of a mechanical interlock and a magnetic engagement, the latter defined by magnetic elements suitable to stabilise said mechanical interlock.

[0043] More in detail, the coupling device **4a** comprises a local protrusion **10** which can be inserted to size in a well-shaped seat **11** obtained in the anchoring device **4b**. As shown in the figures, the preferred embodiment of the local protrusion **10** is disc-button shaped, and the well **11** is a circular recess counter-shaped with respect to the local protrusion **10**.

[0044] Advantageously, the magnetic elements suitable to stabilise the interlocking of the projection **10** and the well **11** are defined, according to the preferred embodiment, by a magnet **7** placed inside the local protrusion **10** and by a bottom or disc **8** placed in the well-shaped seat **11** and retained therein by interlocking or gluing or partial embedding.

[0045] The magnet **7** is for example a neodymium permanent magnet and the bottom or disc **8** is for example in magnetic metal, i.e. sensitive to a magnetic field, such as a disc in a ferrous type metal.

[0046] The bottom or disc **8** may also however be defined by a further magnet, or comprise a further magnet, positioned so as to be attracted by the magnet **7**.

[0047] To house the magnet **7** the coupling device **4a** is preferably and advantageously defined by a base **12** and a cover **13** made integral with each other by welding or gluing or interlocking and defining between them a cavity in which the magnet **7** is placed and clamped.

[0048] The local protrusion **10** is formed by the cover **13**, while the base **12** is substantially a plate having a circular profile.

[0049] Around the margins of the local protrusion 10 the coupling device 4a is provided with attachment means 9 for attachment to the adjacent portions of the elastic elements 2.

[0050] The attachment means 9 may be variously structured and for example are defined by slots 14 through which the elastic elements 2 are able to pass, either as a perfect fit or by forcing them.

[0051] When the elastic elements 2 are interrupted at the slots 14, rivets 15 or the like are provided suitable to attach them.

[0052] Figures 3a and 3b show a useful variant to figure 1: the elastic elements 2 form both a main stirrup loop, shown in the figures with its lower section, and smaller stirrup loops 2a slidably engaged with the main loop and fitted with the coupling device 4a.

[0053] This way, the elastic elements 2 may stably engage, by means of the two smaller stirrup loops 2a, both shoes 5 and also permit movements or sliding of the feet towards or away from each other.

[0054] As already mentioned, according to the invention the wearable article 5 fitted with the anchoring device 4b is preferably and advantageously defined by an improved shoe, the term "shoe" meaning both a single shoe and a pair of shoes.

[0055] The improved shoe 5 is appropriately of the type that is also suitable for normal everyday use and the anchoring device 4b is obtained in the sole 6.

[0056] In particular, the anchoring device 4b is arranged between the heel and the toe at the arch of the foot, where in many cases the sole is raised slightly from the ground.

[0057] The characteristics of the anchoring device 4b obtained in the sole 6 are those described above and the bottom or disc 8 in magnetic metal also has the advantage of reinforcing the sole 6 where this is made thinner owing to the presence of the well-shaped seat 11.

[0058] In its preferred embodiment the sole 6 has the well-shaped seat 11 contoured and delimited by local surfaces 16 made of carbon fibre, so as to obtain maximum resistance to forces.

[0059] The functioning and use of the apparatus 1, described above in a mainly structural sense, are as follows.

[0060] The apparatus 1 permits performance of the exercises already known to and recommended by experienced staff.

[0061] However, it differs substantially in that it permits the performance of the exercises in an optimal manner, and with minimum preparation time.

[0062] The coupling device 4a and anchoring device 4b make it possible to position the elastic elements 2 perfectly and to keep them stable in the optimal position even in the presence of significant forces.

[0063] This is achieved without increasing the weight of the apparatus or making its structure much more complex, thanks to the combined use of an interlocking engagement and a magnetic engagement with a wearable item 5.

[0064] The interlocking engagement of the mechanical type effectively counteracts the lateral forces of the elastic elements 2, while the magnetic engagement stabilises the interlock engagement, in particular preventing the local protrusion 10 from coming out of its well-shaped seat 11.

[0065] The magnetic engagement is advantageous even when no force is exerted on the elastic elements 2, in that it allows freedom of movement for perfecting the standing, lying down or sitting position of the person doing gymnastics or stretching, without the risk of detachment of the coupling device 4a from the anchoring device 4b.

[0066] Preferably and advantageously the wearable article 5 is an improved shoe in that to tone, firm and slim the arms, legs, stomach and buttocks, the elastic elements 2 are usually stretched between the arms and feet by performing various movements and bending actions.

[0067] The improved shoe 5 ensures that the elastic elements 2 can in no way slide along the sole 6, with evident danger to the user.

[0068] The improved shoe also has the advantage of being able to be used as standard excellent footwear for normal everyday use.

[0069] The elastic elements 2 can also be used in the normal way and in various positions without difficulty, insofar as tensioning is concerned, owing to the presence of the coupling devices 4a.

[0070] The invention achieves the proposed objectives and offers important advantages. The apparatus according to the present invention prevents slipping of the elastic elements when significant forces are applied to them, thus permitting the application of greater forces.

[0071] Furthermore, the apparatus according to the present invention permits optimal positioning of the elastic elements, which is performed easily and prevents the exertion of anomalous forces on the body of the person doing gymnastics owing to the presence of asymmetric elastic sections.

[0072] Moreover, the optimal positioning of the elastic elements is immediate, thus speeding up the performance of the exercises.

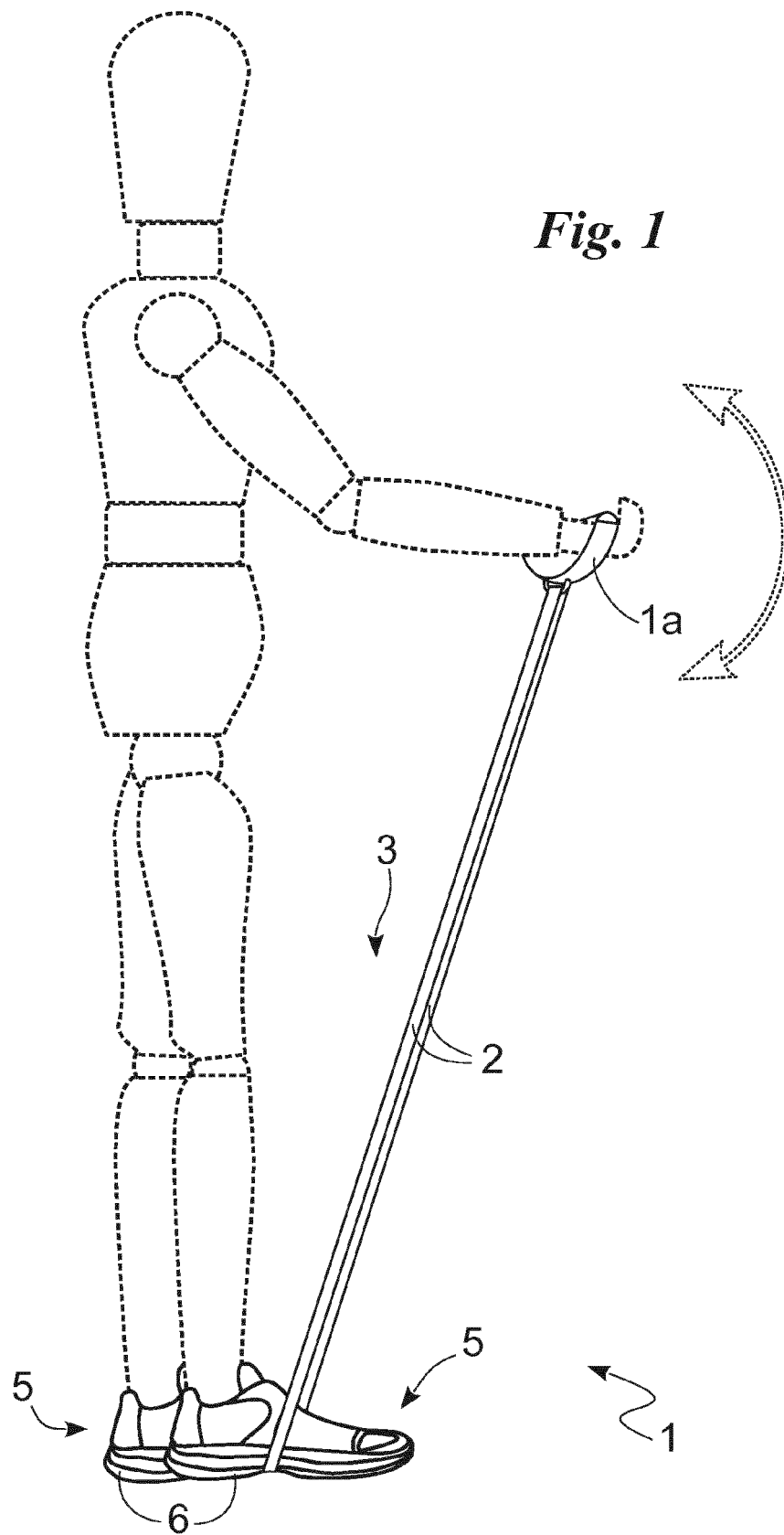
[0073] The invention also refers to the design and development of shoes which can advantageously be used during the exercises and are substantially immune to damage caused by the forces applied thereto.

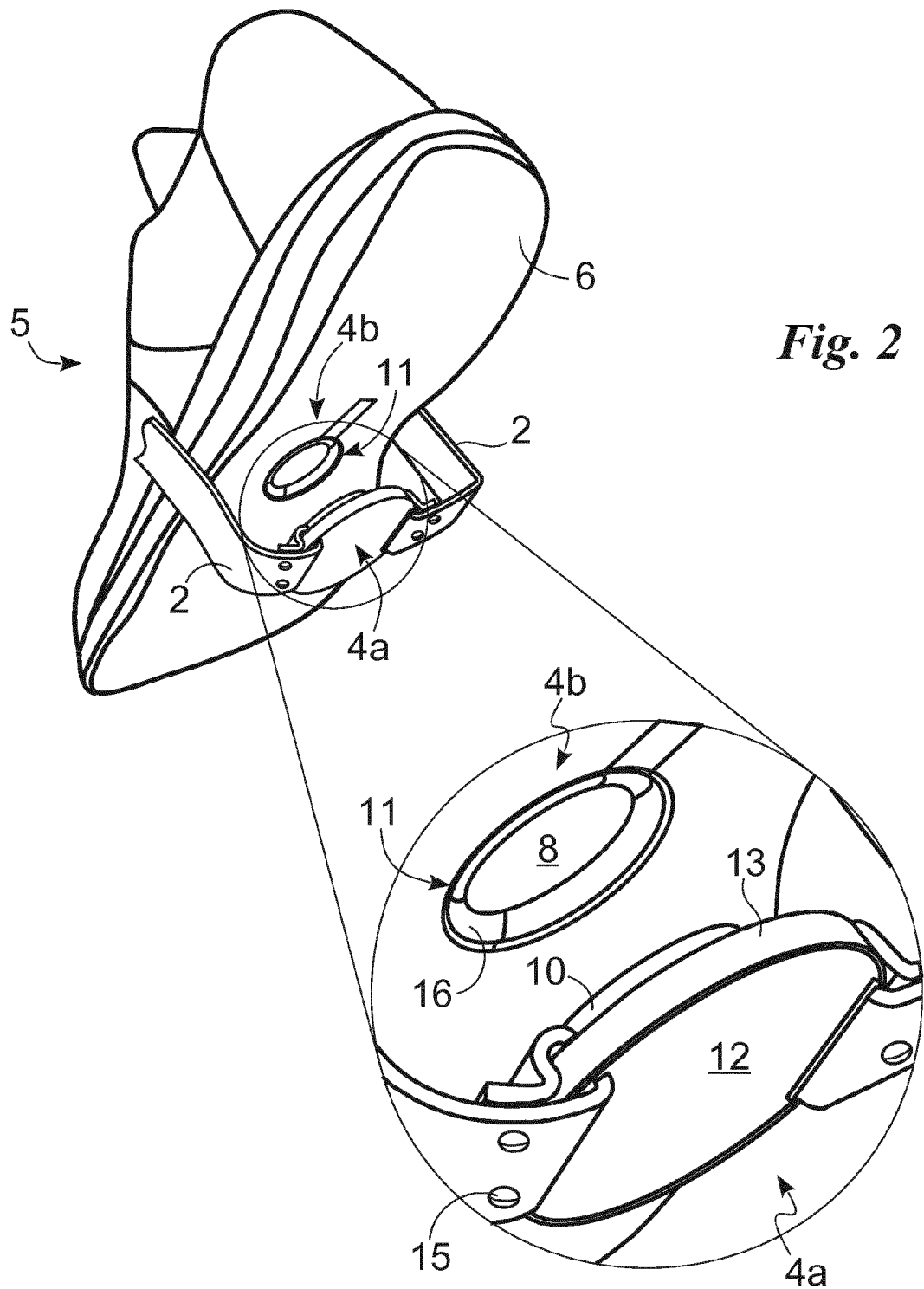
[0074] Variations may be made to the invention without departing from the scope of the inventive concept as defined in the independent claims and by their technical equivalents. All the details may be replaced by equivalent elements.

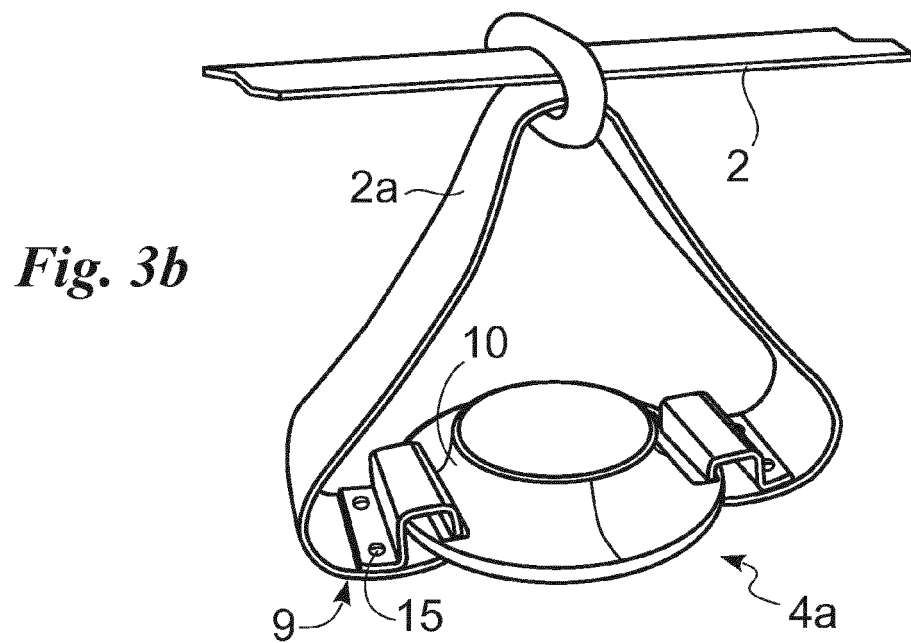
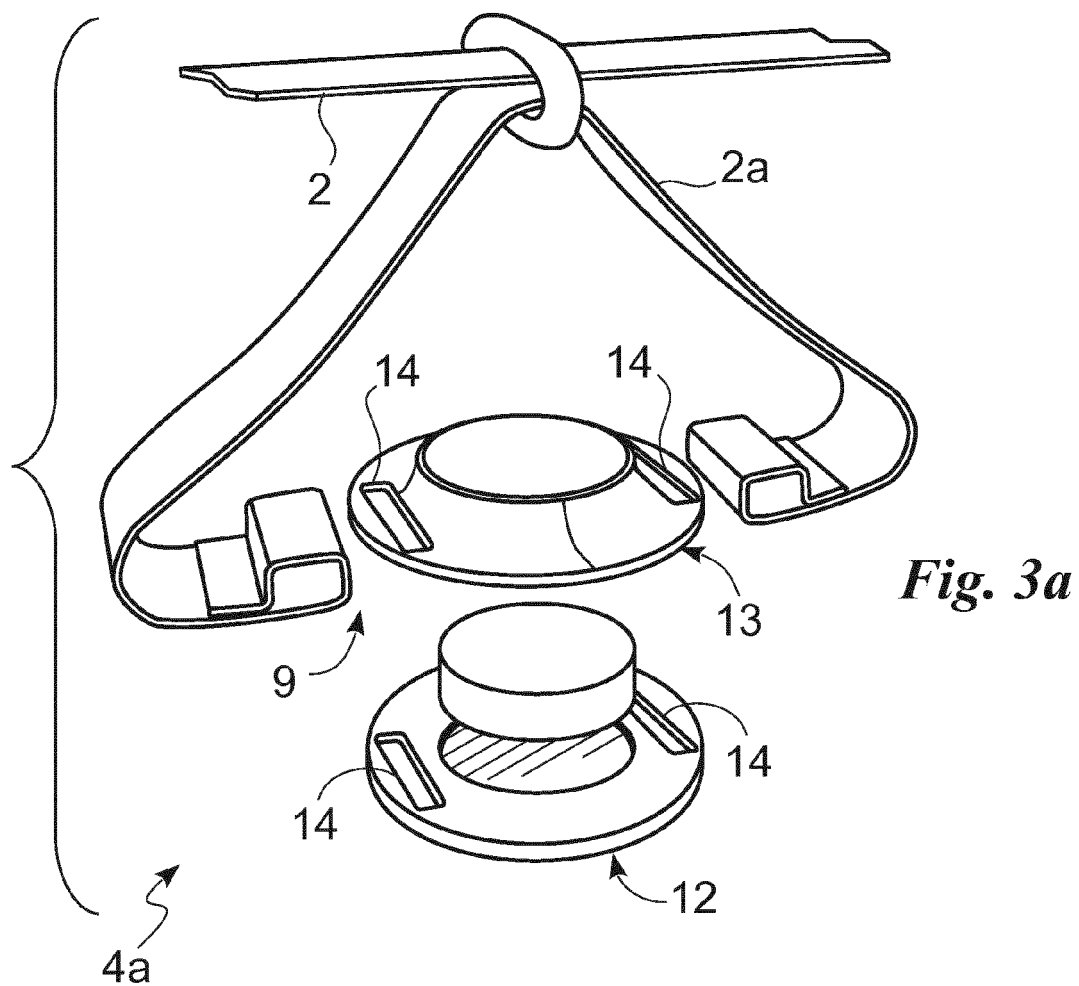
Claims

1. Apparatus (1) for performing gymnastics exercises, of the type comprising flexible elastic elements (2) which can be tensioned and defining, during an exercise, at least one substantially loop-shaped path

- (3) engaging the human body,
- **characterised in that** it comprises at least one coupling device (4a) integral with said apparatus (1) and placed along said path (3), 5
 - and at least one wearable article (5) having at least an anchoring device (4b) engageable by said coupling device (4a) in a manner suitable to define the position of said elastic elements. 10
2. Apparatus (1) according to the previous claim, wherein said wearable article (5) is an improved shoe in which said anchoring device (4b) is on a sole (6).
 3. Apparatus (1) according to one or more of the previous claims, wherein said coupling device (4a) and said anchoring device (4b) are able to engage with each other by interlocking, and wherein magnetic elements are provided suitable to stabilise said interlocking. 15 20
 4. Apparatus (1) according to one or more of the previous claims, wherein said coupling device (4a) comprises a local protrusion (10), and wherein said anchoring device (4b) comprises a well-shaped seat (11) counter-shaped with respect to said local protrusion (11). 25
 5. Apparatus (1) according to one or more of the previous claims, wherein said local protrusion (10) internally houses a magnet (7), and wherein said well-shaped seat (11) has a bottom (8) in magnetic metal, said magnet (7) and said bottom (8) defining said magnetic elements. 30 35
 6. Apparatus (1) according to one or more of the previous claims, wherein said coupling device (4a) comprises a base (12) and a cover (13), engaged with said base, and wherein said magnet (7) is a neodymium magnet clamped between said base (12) and said cover (13). 40
 7. Apparatus (1) according to one or more of the previous claims, wherein said coupling device (4a) is provided with attachment means (9) for attachment to said elastic elements (2) comprising rim slots (14) suitable to engage said elastic elements (2). 45
 8. Improved shoe for the performance of gymnastics exercises, **characterised in that** it has a sole (6) fitted with an anchoring device (4b) comprising a well-shaped seat (11) recessed in said sole (6). 50
 9. Improved shoe according to the previous claim, wherein said well-shaped seat (11) is formed in a central area of said sole (6) and has a bottom (8) in magnetic metal. 55
 10. Improved shoe according to one or more of the previous claims, wherein said well-shaped seat (11) is contoured and delimited by carbon fibre.









EUROPEAN SEARCH REPORT

Application Number
EP 14 18 5590

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Place of search Munich		Date of completion of the search 24 March 2015	Examiner Squeri, Michele
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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