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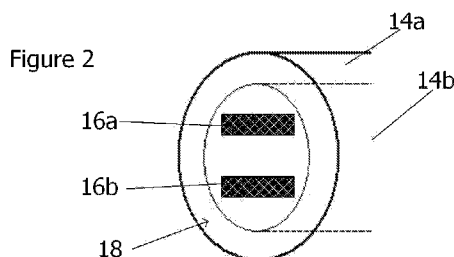
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(54) Title: IMPROVED EXERCISE ROLLER



(57) Abstract: An exercise roller (10) is comprised of at least two sub exercise roller units (12, 14), the sub exercise roller units (12, 14) connected together to form a single exercise roller (10) and separable to be usable as separate exercise rollers.



WO 2010/091477 A1

- 1 -

Improved exercise roller

Field of Invention

This invention relates to exercise rollers and improvements to make a more versatile exercise roller.

5 Background

Foam rollers are used in the exercise and therapy industries for strength and conditioning as well as self massage and flexibility training. These foam rollers come as a single unitary piece, traditionally either 300 mm or 900 mm long.

For some uses a 900 mm long roller is desired whilst for other uses a 300 mm
10 long roller is desired. Generally a short roller cannot be used where a long roller is desired and vice versa. Thus it is necessary to have two or more rollers of different lengths. In a similar manner there are situations where one may desire to have rollers of different diameters. Again this has required the use of separate rollers of different diameters.

15 Summary of the Invention

In an attempt to overcome at least one of the aforementioned problems the invention provides a roller comprised of two or more sub units.

In another form the invention provides an exercise roller comprised of at least two sub exercise roller units, the sub exercise roller units connected together
20 to form a single exercise roller and separable so that at least one sub exercise roller unit is usable as a separate exercise roller.

The sub units may be generally tubular, cylindrical or rod like foam rollers

- 2 -

that engage end on end. The sub units may be other shapes or may be rigid.

The roller may comprise a first tubular or cylindrical sub unit having an internal longitudinally extending passageway with a second sub unit engaging, preferably snugly, within the passageway. The passageway may extend only
5 partially along the length or may extend fully along the length, being open at both ends.

Each sub unit may itself be formed of two or more parts. One or more sub units may comprise a first tubular or cylindrical part having an internal longitudinally extending passageway with a second part engaging, preferably
10 snugly, within the passageway. The second part may be a solid rod like part or may be a tubular or cylindrical part. Where the second part is tubular or cylindrical a third (solid) part may be located within the second part.

Thus the roller according to invention may comprise two, three or more separate sub units or components.

15 Where a tubular part is provided, whether or not it has a component within itself, the tubular part may be formed of a relatively rigid material, such as PVC, or may be formed of a foamed material.

If desired a roller may be provided with an outer rigid tube, an inner tubular foamed core and a central solid foamed core. The rigid outer tube may be the
20 full length of the roller or may be formed of two or more lengths joined together. The number of parts of each sub unit need not be equal. Thus the outer tube may be a single unit whilst the inner tube and/or central core may be formed of two or more lengths.

Where a sub unit is formed of end on end lengths the lengths may be of equal
25 or unequal lengths.

- 3 -

Providing a roller in two or more parts allows individuals that travel the ability to take all or part of the roller with them anywhere. The user has the choice, depending on the configuration of the roller, of taking the whole unit, a shorter length but full diameter roller or a smaller diameter roller, both long
5 and short versions. In addition, if the roller is comprised of two end on end sub units both may be taken and joined together when needed, making a more easily transported roller. Having separate parts can be a discerning factor of whether an athlete or individual brings the roller along with them as the standard roller doesn't allow this, hence maximising the use of the tool and
10 it's benefits.

In the preferred form of the invention the roller is comprised of two sub units and each sub unit is comprised of a first tubular or cylindrical part with a longitudinally extending internal passageway with a second part snugly engaging within the passageway.

15 The internal bore of the first part and the corresponding second part are preferably circular in cross section.

Where the sub units are attached to each other end on end means for attachment are provided on one or both ends on the sub units. In the preferred form of the invention this is comprised of hook and loop fastener
20 material, such as that sold under the Trade Mark of Velcro. Other means for attachment may be used. As examples, complementary press stud type fasteners or tongue and groove type fasteners may be used. A tongue and groove arrangement that engages by rotation about the roller axis, such as found on containers for bulk CD's, may be used. A tongue and groove
25 arrangement that engages by sideways movement of the sub units relative to each other may be used.

- 4 -

Unless the context clearly requires otherwise, throughout the description and the claims the words 'comprise', 'comprising', and the like are to be construed in an inclusive sense as opposed to an exclusive or exhaustive sense; that is to say, in the sense of "including, but not limited to".

5 **Brief Description of the Drawings**

Figure 1 shows an outline perspective view of a first example of the invention;

Figure 2 shows a detail view of the end of part of the first example of figure 1;

Figure 3 shows an outline perspective view of a second example of the invention;

10 Figure 4 shows a detail view of the end of part of the second example of figure 3;

Figure 5 shows a side cross section of a variation of the second example;

Figure 6 shows a detail view of the end of a variation of the first example, and

Figure 7 shows a detail view of the end of a variation of the second example.

15 **Detailed Description of Preferred and other Embodiments**

Referring to figures 1 and 2 there is shown a roller 10 according to an example of the invention. The roller 10 is comprised of two sub units 12 and 14. The sub unit 12 is about 560 mm long whilst the sub unit 14 is about 360 mm long.

The two sub units 12 and 14 are joined end on end using attachment means,
20 which in this example is hook and loop fastener material 16a, 16b, shown in figure 2 on the end 18 of sub unit 14. It will be appreciated that there will be complementary strips on the opposed end 20 of sub unit 12. The strips 16a,

- 5 -

16b may both be hook or loop material or one may be hook material and the other loop material.

The two sub units, when joined thus form a single roller about 900 mm long.

The two sub units may be separated, so providing two separate rollers of
5 shorter length. Thus a single 900 mm long roller may provide the functionality of both a long roller and a short roller. The two sub units 12, 14 need not be of unequal length and may be of equal lengths.

Each sub unit is comprised of a hollow tubular or cylindrical outer shell 12a, 14a and a solid rod like inner part 12b, 14b. The inner and outer parts of a sub
10 unit are preferably the same length. The outer shells 12a, 14a have an outside diameter of about 6 inches (~150 mm) and the inner bore 22a, 24a of each is about 4 inches (~100 mm) in diameter. The solid inner parts 12b and 14b have a diameter similar to that of the inner bores 22a, 24a and are dimensioned so that they are a snug fit but may be readily removed from the corresponding
15 outer part 12a, 14a. The ends of the sub units may be provided with means to secure the inner and outer components together and prevent or resist the inner parts accidentally sliding out of the outer parts.

Thus when a large diameter roll is required (whether it is short or long) the roller is used with the inner part(s) inserted within the outer part(s).

20 When a small diameter roller is required one or both of the inner parts is removed from the corresponding outer part and used either alone or attached together. As seen in figure 2 at least part of the attachment means 16 is attached on the inner part and so the two inner parts may be attached together.

25 It will be appreciated that the inner parts 12a and 12b together may be

- 6 -

considered sub units of part 12 and similarly parts 14a and 14b together may be considered sub units of part 14.

Whilst the inner parts 12b and 14b extend the full length of the respective parts 12a and 14a they need not. The bores 22a, 24a may be closed at one end
5 or may extend the full length with the inner parts 12b and 14b being shorter.

Referring to figures 3 and 4, there is shown a roller 30 according to another example of the invention. The roller 30 is comprised of two sub units 32 and 34. The sub unit 32 is about 560 mm long whilst the sub unit 34 is about 360 mm long. Again sub unit 32 and 34 may be of equal lengths.

10 The two sub units 32 and 34 are joined end on end using attachment means, which in this example is rod 36, shown in figure 4 on the end 38 of sub unit 34. The rod 36 is preferably of wood but may be formed of other materials. The rod 36 is about 27 mm in diameter and about 210 mm long. The rod may be shorter or longer and, particularly for large users, may be 270 mm long. The
15 rod is received in a bore 40 about half the length of the rod. The other part 34 has a similar bore in its opposing face. The rod 36 is a preferably a snug fit in the bore 40 so that when inserted and the two parts 32, 34 are joined together they are relatively rigidly joined.

The rod is preferably sized so that it may be used as a foot roller and the
20 dimensions mentioned above are chosen for this purpose. The dimensions of the rod 36 may be different, particularly if it is not intended that the rod 36 be used as a separate item of exercise equipment.

The example of figures 3 and 4 is similar to that of figures 1 and 2 and each sub unit is comprised of a hollow tubular or cylindrical outer shell 32a, 34a
25 and a solid rod like inner part 32b, 34b. The inner and outer parts of a sub

- 7 -

unit are preferably the same length. The outer shells 32a, 34a have an outside diameter of about 6 inches (~150 mm) and the inner bore 22a, 24a of each is about 4 inches (~100 mm) in diameter. The solid inner parts 32b and 34b have a diameter similar to that of the inner bores 22a, 24a and are dimensioned so that they are a snug fit but may be readily removed from the corresponding outer part 32a, 34a. The ends of the sub units may be provided with means to secure the inner and outer components together and prevent or resist the inner parts accidentally sliding out of the outer parts.

Whilst a simple bore in the inner portions 32a and 34a is preferred, the rod 36 may be received in a locking type bore to more securely retain the rod 36 in the respective bore.

Figure 5 shows a variation in which an insert 40 is located in the end of each sub unit 32, 34. The insert 40 has a bore 42 sized to received the rod 36. The rod 36 has a circumferential groove 44 at each end and each insert has one or more spring loaded balls 46 that are urged to partially enter the bore 42 by spring 48. When the rod 36 is inserted into the bore 42 the ball 46 is deflected and then biased against the groove, thereby retaining the rod 36 in the bore 42.

A roller may be assembled of more than two sub units.

Whilst the two sub units of the example shown are each comprised of two parts, it is not essential that this be so. Two solid sub units may be used. Where two sub units are used one may be solid and the other may be a two piece unit. Where two or more two piece sub units are used, the diameters of the inner bore and corresponding inner part need not be the same. For example, one inner part may be 4 inches in diameter and the other part 3 inches in diameter. Whilst a two piece sub unit is shown, if desired a sub unit

- 8 -

may be formed of three or more generally concentric components.

Figures 6 and 7 show variations of the first two examples, in which at least one sub unit 12a, 32a respectively is formed of a single piece of foam. The foam may be of any suitable diameter such as 4 or 6 inches in diameter.

- 5 Whilst the examples shown have a solid roller, this is not essential - it is merely necessary that the roller has the desired amount of resilience. Depending on the material used the roller may be solid or may have one or more longitudinally extending passageways. These passageways may extend through a unitary sub unit, or one or more components of a multi piece sub
- 10 unit

Whilst hook and loop fastener is preferred other appropriate detachable and re-attachable fasteners may be used.

- It will be apparent to those skilled in the art that many obvious modifications and variations may be made to the embodiments described herein without
- 15 departing from the spirit or scope of the invention.

- 9 -

The claims defining the invention are as follows:

1. An exercise roller comprised of at least two sub exercise roller units, the sub exercise roller units connected together to form a single exercise roller and separable so that at least one sub exercise roller unit is usable as a
5 separate exercise roller.
2. The exercise roller of claim 1 wherein adjacent sub exercise roller units engage end on end.
3. The exercise roller of claim 1 or claim 2 wherein at least one sub exercise roller units is tubular, cylindrical or rod like.
- 10 4. The exercise roller of any one of claims 1 to 3 wherein at least one sub exercise roller unit is a substantially unitary.
5. The exercise roller of any one of claims 1 to 4 wherein at least one sub exercise roller unit comprises a first tubular or cylindrical part having an internal longitudinally extending passageway with a second part snugly
15 engaging within the passageway.
6. The exercise roller of claim 5 wherein the second part is rod like, tubular or cylindrical.
7. The exercise roller of claim 5 or claim 6 wherein the second part is a second sub exercise roller unit snugly engaged within the passageway.
- 20 8. The exercise roller of any one of claims 5 to 7 wherein the second part is tubular or cylindrical and a third part is located within the second part.
9. The exercise roller of any one of claims 5 to 8 wherein the passageway extends the length of the first sub exercise roller unit.

- 10 -

10. The exercise roller of any one of claims 1 to 9 wherein at least two sub units are attached to each other end on end and means for attachment are provided on one or both adjacent ends on the sub units.

11. The exercise roller of claim 10 wherein the means for attachment is
5 comprised of hook and loop fastener material.

12. The exercise roller of claim 10 wherein the means for attachment includes a bore in each of the adjacent ends of the two sub units and a joiner received within said bores.

13. The exercise roller of claim 12 wherein the joiner is a sub exercise
10 roller unit.

14. The exercise roller of any one of claims 1 to 13 wherein at least one sub exercise roller units is formed of a foamed material.

15. An exercise roller substantially as herein described with reference to the drawings.

1/5

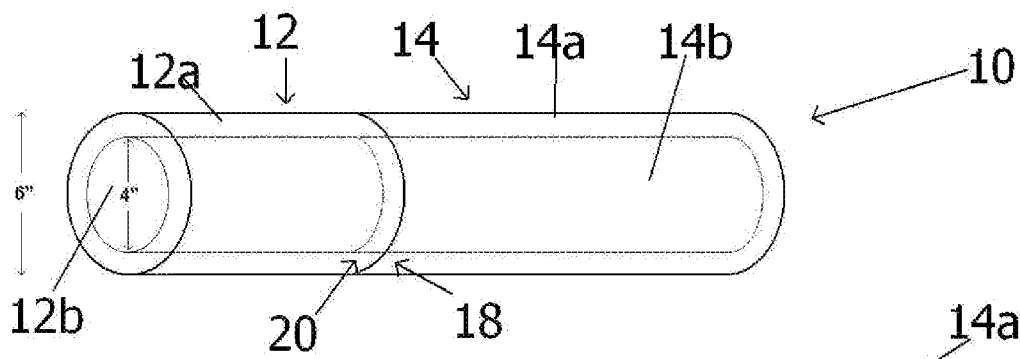


Figure 1

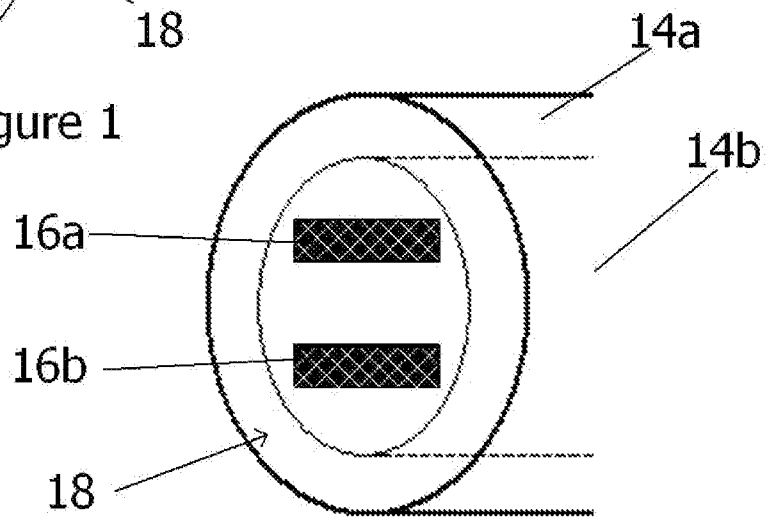
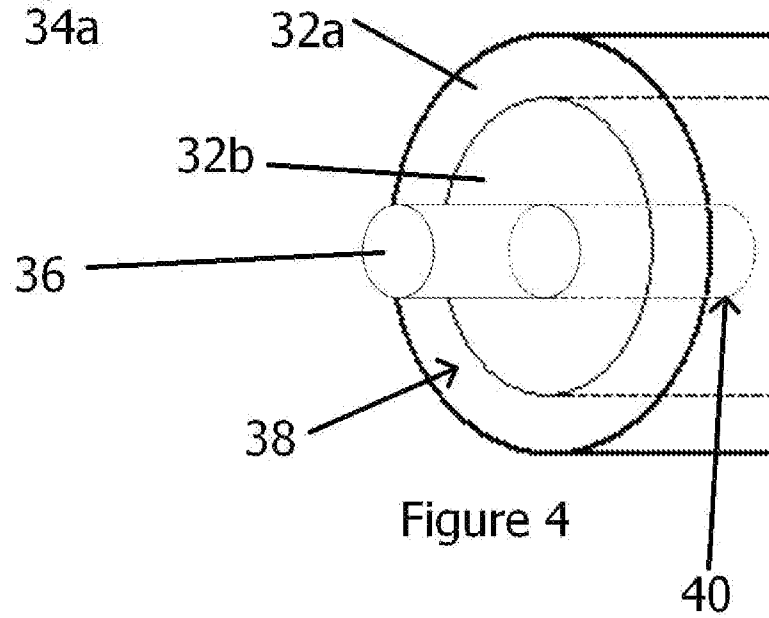
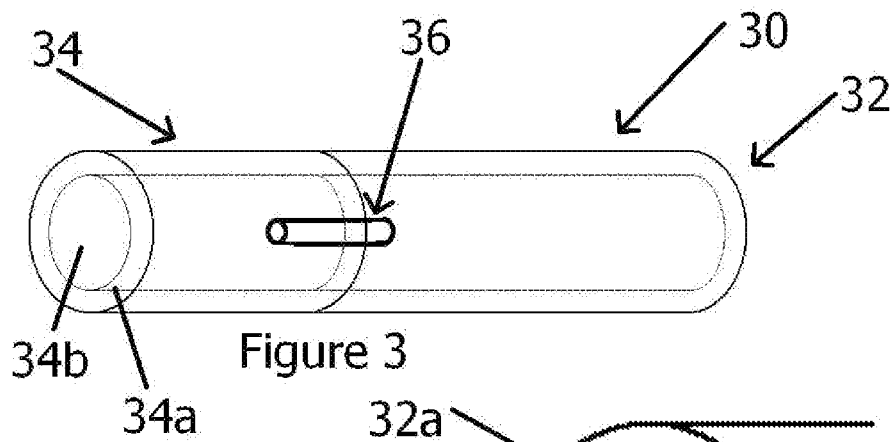


Figure 2

2/5



3/5

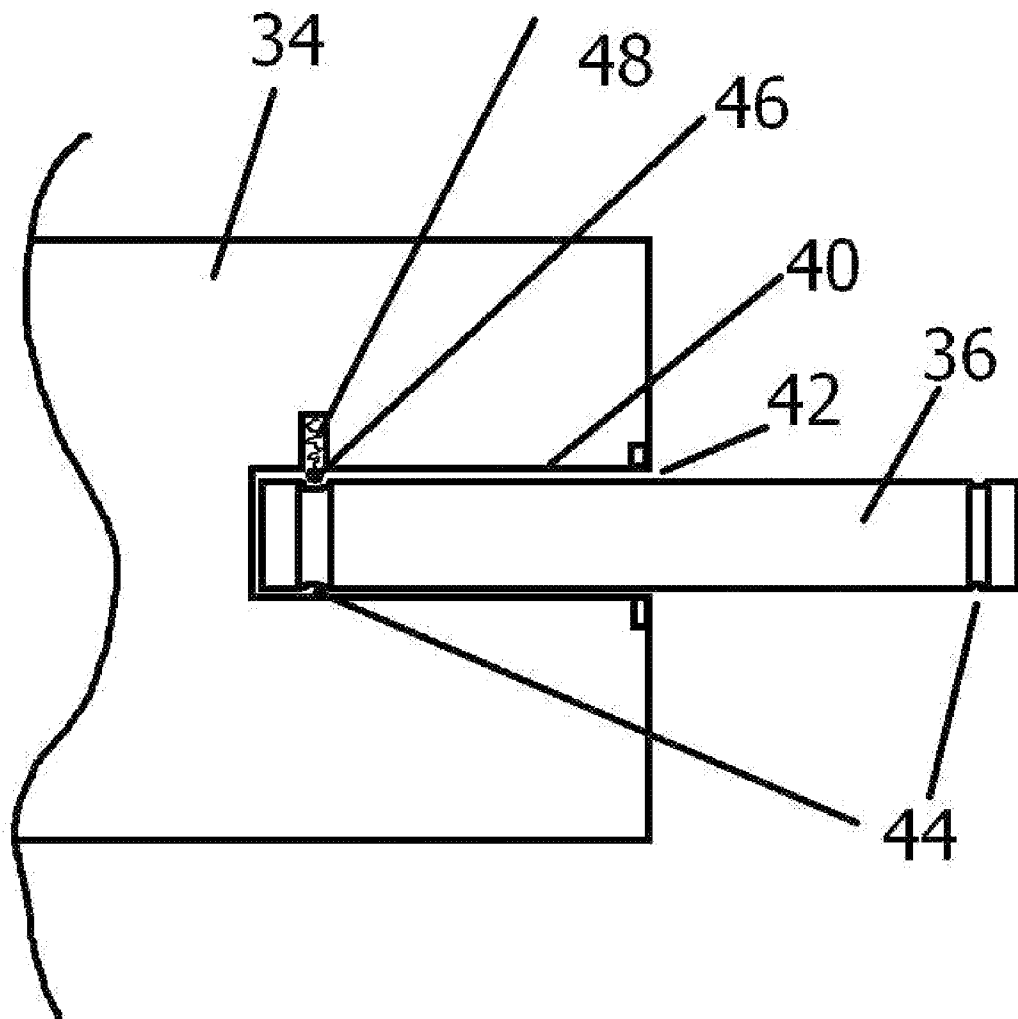


Figure 5

4/5

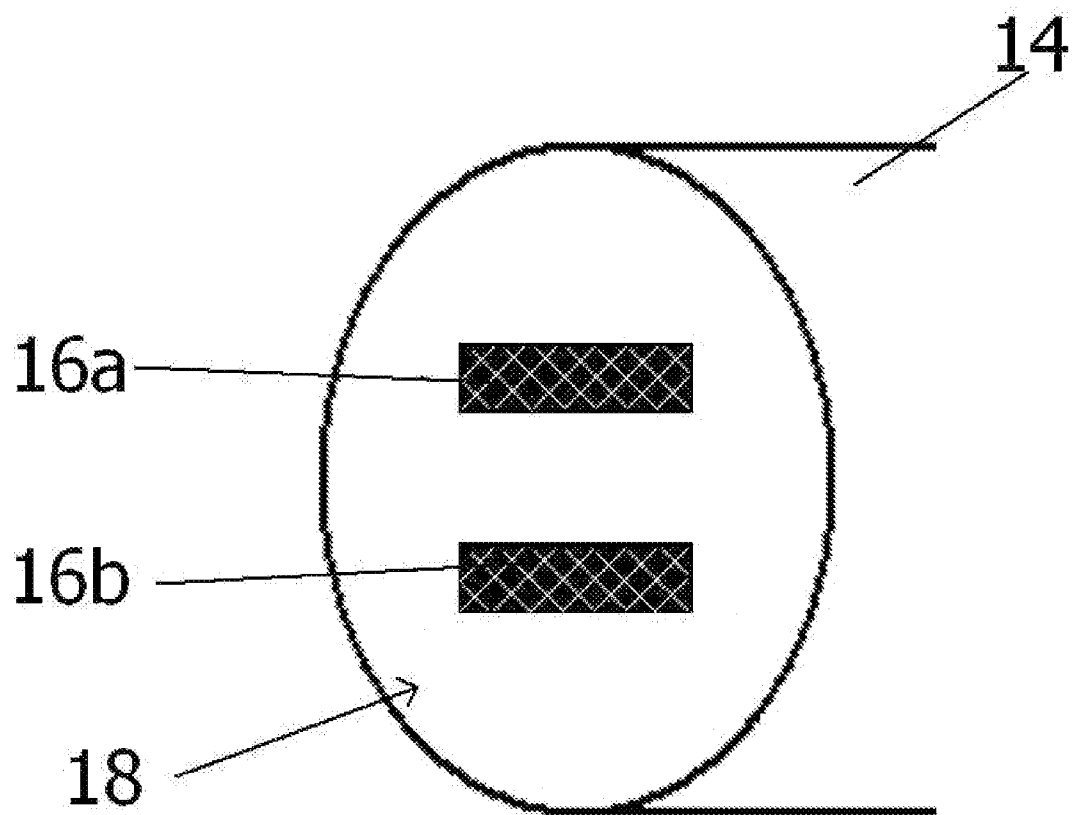
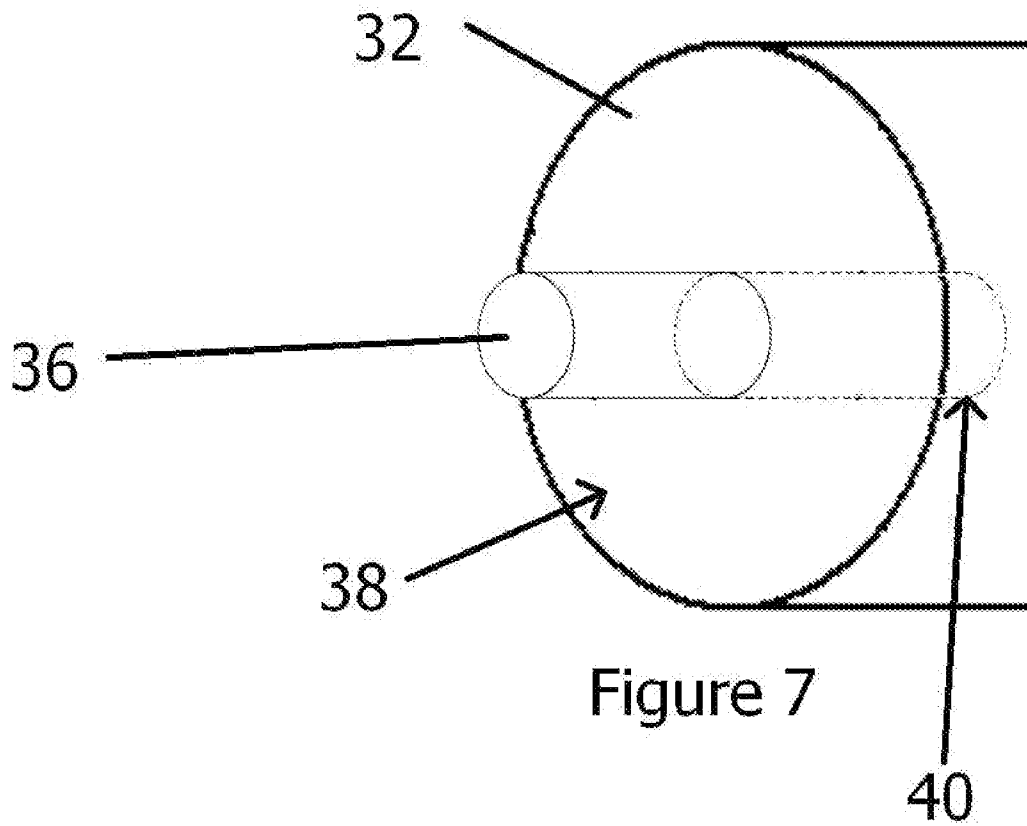


Figure 6

5/5



INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2010/000158

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.

A61H 15/00 (2006.01)

A63B 22/00 (2006.01)

A63B 23/00 (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)

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)

Google Patents, Patent Lens, EPOQUE: EPODOC & WPI; ECLA & IPC A61H, A63B 22/-, A63B 23/- and keywords: Exercise, Roller, Tubular, Cylindrical, Connect, Engage, Removable, Distinct, Hollow, Bore, Cavity, Fastener, Foam, Sponge and like terms.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4643417 A (NIEMAN) 17 February 1987 See Abstract, Figs.1 & 2	1-14
X	US 5445581 A (FERBER) 29 August 1995 See Abstract, Figs.1 & 2	1-4 & 10-13
X	US 5580335 A (SMITH, IV) 03 December 1996 See Abstract, Figs.2-4	1-4 & 10-13
X	US 5637065 A (CHANG) 10 June 1997 See Abstract Figs.1 & 2	1-4 & 10-14

☒ 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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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

"E" earlier application or patent but published on or after the international filing date

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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

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document member of the same patent family

"P" document published prior to the international filing date but later than the priority date claimed

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Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2010/000158

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5580336 A (COALLIER) 03 December 1996 See Abstract, Figs.2 & 3	1-2, 4 & 10-14
X	US 5776034 A (STAMLER) 07 July 1998 See Abstract, Figs.2 & 3	1-13
A	US 5967953 A (NUNEZ) 19 October 1999 See Whole Document	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2010/000158

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 15
because they relate to subject matter not required to be searched by this Authority, namely:
The claim 15 does not comply with Rule 6.2(a) because they rely on references to the description and/or drawings.
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU2010/000158

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report			Patent Family Member			
US	4643417	NONE				
US	5445581	AU 64836/96	US 5536223	WO 1997/002867		
US	5580335	NONE				
US	5637065	NONE				
US	5776034	NONE				
US	5967953	NONE				
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.						
END OF ANNEX						